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**Cover: Outgoing *Maryland Birdlife* Editor, Chandler S. Robbins, conducting a bird survey at Patuxent Research Refuge, August 1986.** (Photographed by Barbara Dowell)

*Maryland Birdlife* 64(1):1

## EDITOR'S NOTE

I welcome Maryland Ornithological Society (MOS) members to my first issue serving as Editor of *Maryland Birdlife*. I thank **Chandler S. Robbins** for creating this journal and serving as its Editor since the 1940s. It is my sincere wish that Associate Editor Mark Johnson and I can do justice to Chan's legacy. Our cover article, written by MOS Historian Don Messersmith, gives a brief history of Chan Robbins, "Maryland's Birding Treasure."

My plan for *Maryland Birdlife* is to publish two issues per year, spring and fall. The journal will publish articles and notes on bird studies in the Mid-Atlantic region. It will also publish results from the various statewide surveys: Christmas Bird Counts, Midwinter Count, May Count, Fall Count, and various hawk watches. [*Currently, there is no compiler for the Midwinter Count. If you would be interested in volunteering in this capacity, please contact me and I will put you in contact with the Seasonal Counts Coordinator.]*

Mark and I are always interested in hearing from potential authors. If you have an idea for a possible article or note, please contact me at ejscarp@comcast.net.

## ACKNOWLEDGMENTS AND DEDICATION

I acknowledge my Towson State College ornithology professor, the late **Compton N. Crook** (pen name Stephen Tall to science fiction aficionados). Compton was the consummate field birder who instilled in me an interest in the study of ornithology. I acknowledge the late **C. Douglas Hackman**, who guided my bird banding project in The Glen and gave me my first opportunity to observe the wonder of birds in the hand. I acknowledge former Towson State University ornithology professor, **Dr. Philip D. Creighton**, for continuing to nourish my interest in birds.

I dedicate this issue to the late **Eirik A. T. Blom**, internationally renowned author and editor of numerous ornithological publications, member of the adjunct faculty at The Johns Hopkins University, and close personal friend, who first introduced me to the opportunity of bird studies at Hart-Miller Island and who infected me with "laridaphilia" and a lifelong passion for gull watching.

Eugene J. Scarpulla
Editor

*Maryland Birdlife* 64(1):2-22

# Chandler S. Robbins: Maryland's Birding Treasure

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Chandler Seymour Robbins was born 17 July 1918, in Belmont, Massachusetts, the eldest of three sons of Samuel Dowse Robbins and Rosa Margaret Seymour Robbins. His younger siblings were Roger Wellington Robbins (one year younger) and Samuel Dowse Robbins (three years younger) (Figures 1, 2, and 3).

Chan's interest in birds was present to a degree from toddler years (Jane Robbins, in litt.). As a boy he went hiking with his grandfather, a Harvard botanist, in Waverly Oaks Park in Boston where he learned to identify the trees and other plants. He began pursuing his birding interest at about age 12. That is when he formed a two- or three-member neighborhood club and began keeping field notebook lists of birds sighted. He roamed the Waverly Oaks Park woods with 3x opera glasses observing birds and animals and spent summers observing shorebirds on the beach at Gloucester. When he was 16, he went on his first Christmas Bird Count. By the time he had graduated from Harvard with a B.A. in Physics, he had participated in 15 Christmas counts. While at Harvard, his Freshman Advisor was famed ornithologist Ludlow Griscom, a pioneer in identifying birds in the field. Chan's first job was teaching science and mathematics at the International Windsor Mountain School in Vermont.

In 1941, Chan joined the Civilian Public Service (CPS) (Figure 4). The CPS was developed at the beginning of World War II to provide "those whose conscience forbade them to kill, the opportunity to do work of national importance under civilian direction rather than go to war" (CPSS 2015). In 1943, as part of the CPS program, Chan was transferred to the Patuxent Research Refuge (PRR) to assist bird banding projects at the fledgling institution. Two years later in 1945, he was officially hired as a Junior Biologist by the United States Fish and Wildlife Service (USFWS) to begin a distinguished career. From the Patuxent banding office, he enlarged his studies on doves, snipe, hawks, and songbirds to determine the effects of pesticides, particularly DDT, on birds (Robbins and Stewart 1949).

On a field trip with the Audubon Society of the District of Columbia, he met Eleanor Graham Cooley, the daughter of Dr. Jacquelin Smith Cooley (of horticultural fame) and Nellie Leah Graham Cooley. Chan and Eleanor were married in 1948 (Figure 5). They made their home on a 2.5-acre site overlooking the Patuxent River in Laurel.

**Figure 1. Chandler Robbins and his two brothers**. On the ladder, top to bottom: Roger, Chandler, and Samuel Robbins, with unidentified women, circa 1930-31. Pictured is the summer cottage that their father Samuel Dowse Robbins had built in Gloucester, Massachusetts. Their father drew up the plans for the cottage, as well as the Belmont house he had built for his bride, Rosa, and the later summer cottage on Berry Bay, Freedom, New Hampshire.

**Figure 2: Left to right: Sam and Chan Robbins.** Overlooking the open water at their childhood summer cottage in Gloucester, Massachusetts, circa 1930-31.

**Figure 3: Left to right: Brothers Roger, Chan, and Sam Robbins.** Near Biddeford Pool, Maine, birding at the marsh (possibly Scarborough Marsh) on a day outing from Berry Bay, New Hampshire, circa 1982-83.

**Figure 4. Civilian Public Service Camp (Number 34, Subunit 1).** Chan Robbins, third row, third from left, circa 1941-42. Digital Image from American Friends Service Committee: Civilian Public Service Records (DG002), Swarthmore College Peace Collection, Swarthmore, Pennsylvania (CPSS 2015).

**Figure 5. Chan Robbins and Eleanor Cooley on their wedding day.** Photo taken during their wedding reception in the Beltsville garden of Eleanor's parents' residence "Hollyhurst," 16 April 1948.

Chan learned new ornithological information on his wanderings around Maryland, and in 1950, he received his M.S. degree from George Washington University with his thesis entitled "*Ecological Distribution of Breeding Parulidae in Maryland*." His career at Patuxent included a 14-year (1961-1974) stint as Chief of the Migratory Nongame Bird Studies Section.

Chan and Eleanor raised two sons and two daughters, all of whom are now active in environmental matters. Chan has banded 151 species of birds on their wooded property over the decades, his yard list reaching 202 with his sighting of a Common Raven over the house in 2008. Until very recently, Chan sang in his Methodist church choir in Laurel.

In this article, I will emphasize Chan's contributions to Maryland ornithology. However, before going into that topic, it would be useful to note his "Lifetime Achievements" which were provided by Chan's daughter, Jane Robbins (pers. comm., October 2014), via David Bridge (Table 1).

**Table 1. Some "Lifetime Achievements" of Chandler S. Robbins.** Projects in boldface type focus on Maryland.

| Project | Years | Collaborators |
|---|---|---|
| **Seasonal Distribution of Bird Populations at the Patuxent Research Refuge** (Stewart et al. 1952) | 1943-52 | Robert E. Stewart, James B. Cope, John W. Brainerd |
| North American Bird Phenology Program | 1943-70, 2014 | Frederick C. Lincoln, Ruth Richards, Jessica Zelt |
| Impact of DDT on songbirds (Robbins and Stewart 1949) | 1945-51 | Robert E. Stewart, Rachel L. Carson |
| ***Birds of Maryland and the District of Columbia*** (Stewart and Robbins 1958) | 1945-58 | Robert E. Stewart |
| **Statewide Christmas Count Network** | 1946-48 | Robert E. Stewart |
| ***Maryland Birdlife*** **(Editor)** | 1947-2014 | numerous Maryland Ornithological Society members |
| Recording songs and calls of North American birds | 1948-75 | unnamed |
| *Audubon Field Notes/American Birds* (Technical Editor) | 1952-89 | John W. Aldrich, Robert E. Stewart |
| Nocturnal bird migration (Lowery and Newman 1955) | 1955 | George H. Lowery, Jr., Robert J. Newman, |
| Pacific albatross studies (Kenyon et al. 1958, Robbins 1966) | 1958-67, 2014 | USFWS, US Navy, Dale W. Rice, Karl W. Kenyon, et al. |

| | | |
|---|---|---|
| "Operation Recovery" program (Baird et al. 1958, 1959) | 1958-69 | collaboration among banders, including weighing, measuring, aging, sexing birds (and ultimately creating Bird Observatories), James Baird, Aaron M. Bagg |
| North American Breeding Bird Survey (Ziolkowski et al. 2010) | 1966-present | USFWS, Canadian Wildlife Service, North American Bird Conservation Initiative, United States Geological Survey (USGS), John R. Sauer et al. |
| *Birds of North America: A Guide to Field Identification* (a.k.a. *The Golden Guide*) (Robbins et al. 1966, 1983) | 1966, 1983 | Bertel Bruun, Herbert S. Zim, Arthur Singer (Illustrator) |
| ***Field List of the Birds of Maryland*** (Robbins and Van Velzen 1968, Robbins and Bystrak 1977) | 1968, 1977 | Willet T. Van Velzen, Danny Bystrak |
| **Breeding Bird Atlas studies and publications** (Robbins and Blom 1996, Ellison 2010) | 1972-2013 | Eirik A. T. Blom, Walter G. Ellison, Maryland/District of Columbia, New Hampshire, Maine, Pennsylvania, West Virginia volunteers |
| Forest fragmentation effects on breeding and wintering songbirds in North America, Mexico, Central America, and the West Indies (Whitcomb et al. 1981, Robbins et al. 1989) | 1974-98 | USFWS, USGS, Robert F. Whitcomb, Deanna K. Dawson, Barbara A. Dowell, et al. |
| Drafting and negotiating USA/Soviet Union Migratory Bird Treaty (USA and USSR 1978) | 1976 | USFWS, USSR, Earl B. Baysinger |
| Additionally, family genealogy including: the children's ancestors; descendants of Reverend Chandler Robbins (1738-1799) of Plymouth, Massachusetts and of Asa Seymour (1757-1837) of Granville, Massachusetts; and 25 cousins in the White House | 1932-present | parents, relatives |

Chan's contributions to the knowledge of Maryland's avifauna are innumerable, but I will mention only a few of them. His name first appeared in *Maryland Birdlife* in the September-October 1945 issue when the District of Columbia Audubon Society had a field trip to Patuxent and he and Robert Stewart showed them around (Burner 1945). He joined that Society shortly afterwards. Many years later in 1979, he was recognized by the Audubon Naturalist Society with their highest honor, the Paul Bartsch Award, for contributions to birding population censuses, *The Golden Guide*, and more.

The following are a few of his studies of Maryland birds:

W. Bryant Terrell, who possessed Frank Kirkwood's Maryland bird record file from 1880 to 1920, loaned the file to Chan who copied the nest record cards for inclusion in the Patuxent file started by Robert Stewart in 1941. This became the baseline foundation for the Maryland Ornithological Society (MOS) nest record file.

In 1947, Chan and colleagues at Patuxent conducted two censuses in deciduous scrub habitats at the Beltsville Agricultural Research Center (Robbins and Stewart 1949). They studied the effects of DDT on bird populations in the scrub forest.

In 1947, Chan and Robert E. Stewart prepared a census of the nesting birds in Belt Woods, a tract of virgin forest in Prince Georges County (Stewart and Robbins 1947). They found what they believed to be "the highest density bird populations ever reported in a pure deciduous forest without edge effect."

On the night of 22-23 September 1953, using a wire recorder, Chan counted 2188 birds flying overhead, which translated to 230,000 birds crossing a one-mile line centered on his driveway. That was the highest count ever recorded in North America (Lowery and Newman 1955).

An article by Chan in *Maryland Birdlife* (Robbins 1965) announced a new type of breeding bird census which is now the United States Geological Survey (USGS) North American Breeding Bird Census. Chan and others tested this in Prince Georges and Howard Counties before it was tested statewide in Maryland and Delaware. It was launched in 1966 and is now nationwide.

The Maryland Winter Bird Survey was initiated by Chan and others from the staff at Patuxent in 1968-69 as reported in *Maryland Birdlife* (Robbins 1970).

The Breeding Bird Atlas project was initiated by Chan in 1970 and tested in Maryland in 1971 and 1978 (Klimkiewicz and Buckler 1971, Klimkiewicz and Solem 1978). This culminated in the publication of the first *Atlas of the*

*Breeding Birds of Maryland and the District of Columbia* in 1996 with Chan as Senior Editor (Robbins and Blom 1996). The *2nd Atlas of the Breeding Birds of Maryland and the District of Columbia* was published in 2010 with the Forward by Chandler S. Robbins (Ellison 2010).

There are other numerous articles in *Maryland Birdlife* and elsewhere written by Chan about some observations of Maryland birds as well as his seasonal reports that he compiled for decades. In 1995, the University of Maryland awarded him an Honorary Doctor of Science degree, but in his humble way, he has never referred to himself as Doctor Robbins, although he could. He has attended all but three or four MOS Conferences since they were first held in 1948. Chan did his first Maryland Christmas Bird Count in 1943 (Figure 6; Brainerd et al. 1944) and since then, according to Chan, he has participated in over 370 Christmas Bird Counts, mostly in Maryland, with about 185 of them just in Prince George's County. He took part again in 2014. It is believed that he has participated in more Christmas Bird Counts than any other one individual, but this cannot be easily verified. Chan served as MOS President from 1952 to 1955, and Trustee (State Director) from 1961 to 2001. From 1947 to 1977, he wrote the quarterly reports of current bird observations for *Maryland Birdlife*, also serving as Editor from 1947 to 2014. He has summarized much of his work in an article in the soon to be published *The History of Patuxent: America's Conservation Research Story* (Perry and Smith [2013 draft]).

## RECOLLECTIONS ABOUT CHAN

Don Messersmith

Many people have written about their first encounter with this now famous man. I first met him in 1962 on a field trip led by Dr. Irston R. Barnes, noted Audubon Naturalist Society officer and leader. The trip followed the International Congress of Ornithology held in Ithaca, New York, that year. One of our stops was at the Ocean City Banding Station where Chan was working on his "Operation Recovery" project (Figure 7). A few years later I was attending a bird meeting at the University of Maryland where a rumor was floating around about a possible sighting of an Ivory-billed Woodpecker. I asked Chan about this and he led me behind a partition so no one else could hear and told me that in the upper reaches of the Savannah River in South Carolina there was a super-secret research facility. Some zoology graduate students from the University of South Carolina had been going in there for unknown reasons, but the speculation was that an Ivory-billed might have been seen there, because the students would have had no interest in the research facility. Nothing more was heard of this.

For several years I invited him to come to my Ornithology class at the University of Maryland, which he graciously did and told the class about the sonograms he developed. His *Birds of North America: A Guide to Field*

Bowie, Md. (entire area of the Patuxent Research Refuge of the Fish and Wildlife Service, 2656 acres; bottomland and swamp, 32%, upland oak 28%, fields 18%, pine 14%, terrace (beech, white oak) 6%, lake 2%).—Dec. 23. Fair; temp. 11°—20° wind NW, 2-8 m.p.h.; ground bare; lake and most of river frozen. Observers in 7 parties. Total party hours, 47; total miles afoot, 52. Mallard, 1; canvas-back (?), 5 (flying over); turkey vulture, 30; Cooper's hawk, 1; red-tailed hawk, 3; red-shouldered hawk, 4; marsh hawk, 1; sparrow hawk, 1; bob-white, 42; mourning dove, 26; barred owl, 5; kingfisher, 1; flicker, 24; pileated woodpecker, 1; red-bellied woodpecker, 27; yellow-bellied sapsucker, 3; hairy woodpecker, 13; downy woodpecker, 71; blue jay, 6; crow, 115; Carolina chickadee, 79; tufted titmouse, 125; white-breasted nuthatch, 49; red-breasted nuthatch, 25; brown creeper, 22; winter wren, 13; Carolina wren, 15; mockingbird, 8; hermit thrush, 3; bluebird, 32; golden-crowned kinglet, 380; ruby-crowned kinglet, 2; starling, 9; myrtle warbler, 20; English sparrow, 12; meadowlark, 28; red-wing, 2; grackle, 41 (including at least 1 purple grackle—I. N. G.); cardinal, 53; goldfinch, 120; junco, 449; tree sparrow, 151; field sparrow, 35; white-throated sparrow, 11; swamp sparrow, 9; song sparrow, 35. Total, 46 species; 2108 individuals. (Seen in area earlier in week: black vulture, 1; sharp-shinned hawk, 1; robin, 1.)—JOHN W. BRAINERD, JAMES B. COPE, IRA N. GABRIELSON, NEIL HOTCHKISS, A. C. MARTIN, CHANDLER S. ROBBINS, MR. and MRS. ROBERT E. STEWART, MR. and MRS. HEWSON SWIFT, LOU WENDT.

**Figure 6. Chandler Robbins' first Maryland Christmas Bird Count.** Bowie (including all of the Patuxent Research Refuge), 23 December 1943 (Brainerd et al. 1944).

*Identification* (Robbins et al. 1966, 1983) was a required book for the students. In 2001, Chan and Eleanor joined my own World Nature Tours trip to the Amazon. I never thought that I would lead a trip with Chan as a participant, rather than him being a leader for one of my trips. It was very gratifying to me to have them on the trip. My most treasured award is "The Chandler Robbins Education and Conservation Award" given by the American Birding Association (ABA), which I received at the 2011 MOS Annual Conference with Chan sitting next to me at the table (Figure 8). ABA established this award in 2001 and "considers that the quality and scope of Chan Robbin's work make him an outstanding person after whom to name the award" (American Birding Association 2015a). In 2015, Chan was awarded ABA's "Roger Tory Peterson Award for Promoting the Cause of Birding" (American Birding Association 2015b).

**Figure 7. Albert Perdick (left), ornithologist from The Netherlands, and Chan Robbins.** "Operation Recovery" project, Ocean City Banding Station, 1962 (Photographed by Don Messersmith).

**Figure 8. "The Chandler Robbins Education and Conservation Award**." Presented by the American Birding Association to Donald Messersmith (with the Award's namesake at his side) at the MOS Annual Conference, Wisp Mountain Resort Hotel and Conference Center, McHenry, Maryland, 21 May 2011 (Photographed by Bill Murphy).

**Figure 9. Chan Robbins (left) and Winston Banko (USFWS) aboard the *Blackhow*.** Laysan Island (Northwestern Hawaiian Islands), March 1965.

Jan Reese

Jan Reese relates his first encounter with Chan. "Chan always participated in the St. Michaels Christmas Count, and I first met him there in 1952 as a teenage student of Richard Kleen's. I remember vividly my first Chan moment. The 4:00 a.m., pre-Christmas Count, gathering and assignment to count areas was breaking-up at the Boy Scout Lodge in St. Michaels and as the group proceeded to the automobiles this booming "who, who-who, who, who" jarred the still night. Being a naive teenager and novice bird watcher, I had never witnessed or heard anything like that, especially coming from an uninhibited adult in the middle of the night."

"Another similar Chan moment came the following spring while listening for rails at Pokata Creek marsh along Elliott Island Road in Dorchester County at 10:30 at night. Few if any rails were calling. In the dark we hardly noticed Chan walk over to his car from which he pulled a shotgun and instantly fired it into the air scaring the dickens out of all of us. I was especially alarmed since I had previously seen this uninhibited adult do that "hooting" thing on the night of the Christmas Count. My alarm was short-lived as the marsh all around us suddenly burst into more rail calls than one could count."

"Annual MOS Conferences in the 1960s at the old Hastings-Miramar Hotel in Ocean City were sort of like a family reunion with the highlight being Chan's pre-dawn trip to Pocomoke Swamp. This usually involved Chan's car trailing a lengthy caravan rolling along slowly in the dark on narrow back roads to a destination. When Chan's car stopped, you knew to quickly disembark or you would miss the show. Stepping out of the car, Chan would start walking backwards paralleling the caravan while orchestrating with a pointed arm left "Kentucky Warbler", right "Prothonotary Warbler", left "American Redstart", right … . By the time he reached the last car we would usually have amassed at least 15-20 species of birds. His concentration and hearing were on a par with a bat."

As the years went by, Jan participated in Chan's "Operation Recovery" banding projects and Breeding Bird Survey routes. In the early 1960s, Jan initiated bird studies of his own. Chan was his professional contact. "A time came when I felt ready to publish something and Chan was there with interest, advice, cooperation, enthusiasm, and most of all, lots of encouragement. With his help, in 1964, I realized my first publication in *Maryland Birdlife* (Reese 1964). This has continued with Chan's editing advice right up to 2014 (Reese et al. 2014)."

Jan concludes: "The enthusiastic guy with flat top hair, expressive eyebrows, Hawaiian shirts, a bounce in his step, distributing encouragement, and tuned into more sounds than you will ever hear, is an exemplary individual and worthy role

model for all aspiring birders. Success of the MOS is largely the result of Chan's dedication, volunteer efforts, and significant monetary contributions."

Phil Davis

Phil Davis, current Secretary of the Maryland/District of Columbia Records Committee (MD/DCRC) wrote that "Chan was one of the founding members of the MOS Records Committee, serving an original four-year term from 1985-1988, under the Chair of renowned birder Claudia Wilds. After rotating off the committee for a required one year hiatus, Chan was reelected to a second four-year term, from 1989-1993."

"The seminal publication, *Birds of Maryland and the District of Columbia* by Stewart and Robbins (1958) served as the baseline document for the committee's continuously evolving Official List of the Birds of Maryland and also for the District of Columbia. Regional rarity reports published in Stewart and Robbins (1958), including sight records accepted by the authors, are considered to be accepted records by the MD/DCRC. This important publication directly contributed 445 MD/DCRC rarity reports and records for Maryland and the District of Columbia. The oldest of these published historical rarity reports is of an Anhinga collected at Elkridge Landing on the Patapsco River sometime prior to 1805."

"Chan, himself, is credited with providing documentation to support 36 MD/DCRC rarity reports. His first documented report was of 9 Wilson's Storm-Petrels observed inland in Worcester County on 3 July 1945, following a hurricane, the first report of this species in Maryland from other than offshore. His second report of 2 Sandwich Terns observed on 19 September 1945 on an exposed mud flat in Ocean City, promoted this species from the Maryland "hypothetical" list. Notable records that were personally credited to Chan include Maryland's first White-winged Dove, which he observed while conducting his Cokesbury (Somerset County) Breeding Bird Survey route in June 1970. He also found a rare inland Ipswich (Savannah) Sparrow on the Lower Kent Christmas Bird Count in January 1971."

"According to data provided by Danny Bystrak at the Bird Banding Laboratory , Chan has banded over 184,000 birds in North and South America and the Pacific Ocean between 1950 and 2011" (Figure 9). Some were banded by his sub-permittees under his Master Banding Permit. About half of the banded birds were albatrosses banded on Midway Island: ~65,000 Laysan Albatross and ~25,000 Black-footed Albatross!

Chan also banded the second Clay-colored Sparrow in Maryland as well as several Western Wood-Pewees.

Davis also had an opportunity to go through the Patuxent Wildlife Research Center (PWRC) archives and located some interesting historical information in Chan's files from the 1930s to 1980s. One item referred to DC Audubon birdwatching trips with lists from Roger Tory Peterson 1944-46, one of which hosted 160 birders (!); there also was an announcement of the first Ocean City pelagic trip in 1973.

"As part of the MD/DCRC historical canvass, Davis also reviewed the 2″ x 5″ Bird Phenology Program card file for additional reports and supporting documentation for regional rarities. This set of cards begun by Wells W. Cooke in the late 1800s was last maintained by Chan into the 1970s." These cards are now being digitized by Jessica Zelt (Nuwer 2014).

David Bridge

David Bridge is another person who has had a long association with Chandler Robbins. He wrote, "Chan is one of my great mentors and a pronounced influence on my career and life. I went on my first Christmas Bird Count (Triadelphia Reservoir) with Chan on 28 December 1958; we slept at his house the night before the count. We went owling in the morning (naturally); I was a senior in high school, age 17. *Birds of Maryland and the District of Columbia* (1958), was 'my Bible' growing up; I took this book everywhere, wore out several copies. By the spring of 1958, I was contributing observation/data for 'The Season' in *Maryland Birdlife*. I received a banding permit in August 1959 at age 18 as soon as it was legal, with Chan as my sponsor."

"He encouraged young and old, and new alike. 'This presents a wonderful opportunity for amateur ornithologists to make a worthwhile contribution to science' (Robbins et al. 1959). It was statements like this that stimulated me, and I'm sure others to become better observers and birders. Chan inspired me and many others, to become bird banders and to make real contributions. Being a bander, I think, made most of us much more serious about birds, bird study, ornithology, etc. You could study birds in the hand, examine plumages and molt, ask more questions, take measurements, etc. Bird banding, at the least, provided an opportunity to do these types of activities."

Paul Bystrak

Paul and Danny Bystrak have known and worked with Chan for over 50 years. Paul has submitted some of his memories of Chan which I am including here. "I first met Chan when I was young - I think it was 1962, when I was 15. The next door neighbors belonged to the same church as Vernon Kleen. They noticed Danny and I had an interest in birds, and connected us with him. Vernon introduced us to Chan. We helped Vernon with his banding, and we used to spend long days at PWRC. Vernon took us to Patuxent Bird Club meetings since we were too young to drive. I think that we became members of MOS in the fall

of 1962, but don't really remember. Vernon introduced us to Christmas Counts and the May Counts, but Chan was the one who drove us to do the Christmas Counts outside the Laurel area. I think the first one I did was Lower Kent, and we stayed at Dotty Mendinhall's estate 'Dam Site' on the shore of the Chesapeake Bay. The first year, I did shore counts in street shoes because I didn't own rubber boots! I got pretty wet and muddy."

"One month to the day before I was born, Chan did the first run of the Southern Dorchester Christmas Count. One of the life lessons I got from doing this count happened at sunset at the Bestpitch Bridge in Dorchester County. We were on the bridge waiting for Short-eared Owls and watching large flocks of Red-winged Blackbirds going to roost. I commented about the huge numbers. Chan asked how many? I said I don't know. Chan said, 'Don't just look – count!' And he taught me how to pick out and count a small block of birds and then use that block as a unit to count the larger mass. So that started me on the path to precision in thought, which has stood me well throughout my life. I always count now."

"Another time we were there and he asked if I thought that the hawk high up above was a Sharp-shinned or a Cooper's. Isn't it a Red-tailed I asked? He replied, "No, not the red-tail, the hawk way above that!" I couldn't see the bird above it without my 10x binoculars, but he had seen it without binoculars! We agreed it was a sharpie." I think it was the summer of 1966 when we went to work for Chan, who shared an office in the basement of a building at PWRC with Willet Theodore Van Velzen. One of my memories was that a report came to the office of a Bachman's Warbler somewhere (I'on Swamp, South Carolina, I think). Chan suggested that Danny and I go look for it, but I didn't know birds well enough to realize that it was the last chance to see one, and missed out."

"In those days statistics were run on huge calculators with a large keyboard. I think they were Monroe brand and they had 8 rows of 10 keys on them. Chan would sit in the office clicking away on one for hours some days, running sums of squares and squares of sums or whatever. Occasionally, he would comment that the results weren't always what expected, but he couldn't figure why. Finally, he had a service man come in and look at it. The guy discovered that the return spring on one of the keys (a 7 key, I think) was out of position, and the key did not return fast enough under some use patterns! So, every once in a while, he got slightly anomalous results. This taught me to trust my hunches – if data do not look 'right', you need to go through it until you are sure that it is right. You would be shocked and dismayed at how often I find entry errors in studies I review."

"Once we were gathering at Irish Grove Sanctuary the night before the Crisfield Christmas Count. Off in the dark somewhere, there was an owl doing the

'begging' call. A few of us were listening and opining as to whether it was a Barn Owl or a Great Horned Owl. Chan arrived about that time, so we asked him to come over and identify the odd bird we were listening to. He listened for a minute or less, and said 'It's an owl!' and went on into the house. It was the precise answer, since further identification would be speculation. The Crisfield circle nicks a tiny piece of Saxis, Virginia, and Chan was the only one to work that sector. Since he stopped participating, no one else has been willing to drive an hour-and-a-half each way to get a few acres of Virginia. He is the ultimate team player."

"For nearly 50 years, Chan and I worked the Bucktown territory on the Southern Dorchester Count. We developed a pattern where I would arrive about dawn and hike in the closed area of Blackwater National Wildlife Refuge. He would get the key at some point in the morning and pick me up at lunch. It's been a couple of years now, but I still miss seeing that Chevy Belair station wagon moving slowly through the pines, looking for me."

Bob Ringler

Bob Ringler accidentally met Chan in 1975 when Chan was in the middle of running a Breeding Bird Survey route in Howard County. Later, Chan gave Bob one of his last BBS routes when he could no longer hear bird songs well enough. Chan and Bob worked closely together proofreading the *2nd Atlas of the Breeding Birds of Maryland and the District of Columbia* (Ellison 2010) and he also assisted Chan with the Season Reports in *Maryland Birdlife* as the Assistant Editor.

Barbara Dowell

Barbara Dowell has a unique perspective on Chandler Robbins. She worked for and with him for 27 years and participated at his side on several projects in Guatemala (Figure 10) and elsewhere. It is her work with him in Maryland (Figure 11) that she remembers and summarizes here and I quote, "Working with Chan was always a learning experience for me. He always led by example. He believed in hard work and doing a thorough job. I first joined him and Deanna Dawson on the Forest Fragmentation project while working 50% secretary and 50% field work (which was my first love) locating forests of different sizes each day and getting permission from the landowners to conduct point counts on each of three different visits. Chan always believed in rewarding your effort. While Deanna and he had done most of the work (meeting with statisticians, analyzing the data, writing and rewriting after editorial review), he rewarded me by putting my name on the manuscript (Robbins et al. 1989). I had never been an author before. We spent many hours together conducting vegetation surveys on the hundreds of plots where we had done our bird surveys. This, too, was a learning experience, as soon I was taking young interns out and

**Figure 10. Chan Robbins recording bird songs.** Cerro San Gil, Guatemala, April 1996 (Photographed by Barbara Dowell).

**Figure 11. Chan Robbins conducting a bird survey.** Patuxent Research Refuge, August 1986 (Photographed by Barbara Dowell).

we had to learn to identify correctly the trees and shrubs. We carried a lot of books with us in those days. I wished I had taken more botany courses!"

"We always had to work within a strict budget, so we decided to pick forests of different sizes (close to Patuxent) on which to conduct more thorough Breeding Bird Counts. It was in the 1980s and numerous articles were being written about the disappearance of Neotropical migrants in our forests. At this point, Chan turned our attention to monitoring the nesting success in some of our study sites that were close to Patuxent. I found so many nests in Belt Woods that I couldn't keep them checked regularly so Chan recruited help at a local bird club where he was a guest speaker. Jane and Fred Fallon volunteered and Jane was an excellent nest finder and also was a very expert computer programmer and was looking for work in a field she loved. Chan and I had a lot of data that needed to be analyzed and Jane was the person we needed."

"During my tenure with Chan, we worked on two of Maryland's Atlas projects. While most of the Atlas was conducted by volunteers, Chan felt that there needed to be a control to measure how well these volunteers were covering their blocks. He selected a number of blocks (at random throughout the state) for professionals to monitor on a quarter block basis. We hired two exceptional students during these atlases, John and Michael O'Brien. They were the quality recruits Chan attracted. They worked early and late, seven days a week and did so with minimal supervision. We did not have the funds to hire interns for the second Atlas, so I'm sure we didn't get as good coverage."

"Working with Chan for 27 years was such a joy. I needed to go back to school for statistical training and for graduate degrees, but felt that I couldn't learn more and enjoy more the projects we were working on. I was getting to work with birds and learn from Chan. He always welcomed my ideas. We repeated sites he had studied fifty years earlier with Stewart, the original data published in *Birds of Maryland and the District of Columbia* (Stewart and Robbins 1958). We found several sites in Garrett County that were still intact. We repeated them to see how bird populations had changed over time. At least two or three of the sites have been altered since our study, even the State-owned ones, and others which were privately owned, so it was a once in a lifetime opportunity to study bird populations over time. He always had infinite patience with my questions. I'm sure so many people feel the same about his helpful way. I never enjoyed (actually hated) public speaking and quickly learned that Chan was a master at it and always in demand, so we made a good team. He recruited experienced volunteers from his many talks at the many ornithological meetings he attended, and I did the behind the scenes organizing."

"I can say without reservation that I worked with a man I truly admired. I have never known a more generous couple than he and his beloved wife Eleanor. I

witnessed on so many occasions, over the years, examples of their generosity – funding students, paying for meeting expenses so a whole Cuban group could come and give presentations. I could go on and on, but I'm sure he did it with no intent of being praised for it. I was honored to have worked with and known him."

"I had two wonderful mentors in my life. Don Messersmith whose ornithology class was the best class I ever took. It was on an ornithological field trip that I met two wonderful bird banders, Margaret and Don Donnald. I learned the best techniques possible from the Donnalds for banding and handling birds, which I used so much in my work with Chan. I enjoyed my ornithology class so much that I took two entomology classes from Don Messersmith and thought about doing graduate work in entomology and probably would have tried to get into graduate school had I not gotten the job working with Chan, and of course, because of Chan himself, with whom I have enjoyed a special friendship."

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These comments from people who have benefited from knowing and learning from Chan represent only a few of the many people whom Chan has helped, as well as the thousands who have benefited from his pioneering censusing work in this and other countries. He is still active at age 96 and is working to organize files, compile Eleanor's writings (Eleanor passed away at age 91on 16 February 2008.), pursue more family genealogy records, and welcome people who wish to consult with him. It is indeed an honor to know him and a pleasure to have compiled these few lines about him. To bring together a complete history about Chan would require a lengthy book. Chandler S. Robbins is truly "Maryland's Birding Treasure."

## ACKNOWLEDGMENTS

A number of people helped me compile this article about Chan Robbins, but I especially want to thank David Bridge, Paul Bystrak, Phil Davis, Barbara Dowell, Jan Reese, and Bob Ringler for their submissions about Chan. They provided personal insights about their relationships with and encouragements from Chan. Space did not permit me to include comments from the many Marylanders, both professional and amateur, who have known and worked with Chan. Thanks are also extended to Kinard Boone (Computer Specialist, PWRC) and Barbara Dowell for providing photographs, and to Jane Robbins and Barbara Dowell for supplying information about the photos. I also want to thank Gene Scarpulla for his help, his additions, and careful editing of this article.

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# Effects of Sea Level Rise on Foraging Habitat of the Piping Plover (*Charadrius melodus*): A Geographic Information Systems Approach

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**ABSTRACT:** The shorebird species, Piping Plover (*Charadrius melodus* Ord), an at-risk species with populations along the United States Atlantic shoreline, is predicted to experience negative impacts from rising sea levels over the next century. The breeding and foraging habitat of *C. melodus* is currently under threat from human disturbances and, over the next century, rising sea levels will further threaten its foraging habitat. Many coastal ecosystems are at risk from the global average sea level rise; the risk along the Mid-Atlantic shoreline of the United States is greater than many coastal ecosystems due to localized sinking/subsidence of the land surface. Due to these sea level changes, Mid-Atlantic coastal wetlands, which are an important foraging habitat for *C. melodus* chicks, are predicted to be at risk. To investigate the probability of effects on *C. melodus* foraging habitat, we modeled the influence of predicted magnitude of sea level rise at wetlands within the predicted suitable habitat of *C. melodus* at time intervals of 30, 60, and 120 years using Geographic Information Systems (GIS). Results demonstrate that sea level rise effects will vary markedly depending on the location of the wetlands habitat of *C. melodus*. Both barrier islands, Assateague Island National Seashore (Maryland) and Chincoteague National Wildlife Refuge (Virginia), are projected to have substantial net losses in 120 years ranging from 73-94% and 48-90 % for Assateague and Chincoteague, respectively. Conversely, habitats at Cape May Point State Park (New Jersey) show little-to-no negative impact from sea-level rise. The results from this assessment suggests that: 1) the effect of sea level rise over the next 120 years on wetlands foraging habitat for *C. melodus* is strongly site specific; 2) some locations are likely to see significant losses of wetlands foraging habitat for this species; and 3) the sites at greatest risk are barrier islands. Since the magnitude of projected habitat loss in the two barrier islands in 120 years approaches or exceeds 50% and may be as high as 94%, and given that *C. melodus* is already threatened, this anticipated loss of foraging habitat would place an additional stress on this and other similar species' conservation status.

Keywords: *Charadrius melodus*, foraging habitat, Geographic Information Systems, GIS, Piping Plover, predicted suitable habitat, sea level rise, wetlands

## INTRODUCTION

Global climate change is expected to increase the rate of habitat loss for many wildlife species, resulting in the possible extinction and/or extirpation of vulnerable species (Thomas et al. 2004). Mid-Atlantic sea level rise in North America is likely to be at a significantly greater risk than the observed global sea level rise due to localized sinking of the land surface (Cahoon et al. 2006). Global sea level has risen approximately 120 m (394 ft) due to natural processes over the last ~23,000 years. Currently, global sea level rise rate has increased beyond the naturally occurring rate due to climatic changes (Cahoon et al. 2006).

Shorebirds are particularly at risk from sea level rise (Jetz et al. 2007, Convertino et al. 2011). Recent projections of future habitat loss for shoreline-dependent species at coastal sites in the United States range from 20-70% (Galbraith et al. 2002). One shorebird species of interest is the Piping Plover (*Charadrius melodus* Ord), federally listed as threatened in the United States Atlantic Coast (*C. m. melodus*) and Northern Great Plains (*C. m. circumcinctus*), and as endangered in the Great Lakes of the United States and Canada (*C. m. circumcinctus*) in 1986 due to habitat loss from human development (USFWS 2009). Over the past 20 years, conservation management has led to an overall increase of 25% in *C. melodus* populations; however, recovery goals have not been fully met (USFWS 2009).

The Atlantic population of *C. melodus* is uniquely vulnerable to global climate change because of the threat of sea level rise on their coastal habitat used for both breeding (Figure 1) and foraging (Figure 2; Convertino et al. 2011, USGS GAP 2011). Since the Atlantic population breeds only on the coast (Loegering and Fraser 1995) and is at risk from sea level rise, this study focuses on three Mid-Atlantic locations -- Assateague Island National Seashore (Maryland), Chincoteague National Wildlife Refuge (Virginia), and Cape May Point State Park (New Jersey). The barrier islands, which include both Assateague and Chincoteague, have more than 57 $km^2$ (22 $mi^2$) of beach, dunes, marsh, and maritime forest, which provide habitat for shorebirds. Because of Cape May's geographical location and orientation between Delaware Bay and the Atlantic Ocean, migratory birds congregate on the Cape May Peninsula (Burger et al. 1997). Records show that *C. melodus* has nested on the three chosen Mid-Atlantic locations (USFWS 2009).

Coastal wetlands habitats are expected to experience acute negative impacts from sea level rise, as compared to all continental coast habitats, because their

**Figure 1: Day-old Piping Plover (*Charadrius melodus*) chicks with a hatching egg between them.** Assateague Island National Seashore, Maryland, 31 May 2012 (Photographed by PLL).

**Figure 2: Adult Piping Plover foraging in wetland area.** Cape May Point State Park, New Jersey, 10 May 2013 (Photographed by PLL).

low elevations and process of vertical land building (wetland accretion and subsidence) are not expected to keep pace with future relative sea level rise (Titus 1988, Titus et al. 2009). If sea level rises faster than localized wetland accretion, coastal wetlands will become submerged and disappear.

The Atlantic population of *C. melodus* during breeding season comprises almost half of the United States population (Elliott-Smith et al. 2009). Therefore, it is critical for their population's recovery to study the impacts of sea level rise on *C. melodus* habitat along wetlands on the United States Atlantic coast during breeding season. According to the 2006 Piping Plover census (Elliott-Smith et al. 2009), the United States Atlantic coast population represents approximately 48% of the total *C. melodus* United States population. In 2001, the United States Atlantic coast population of *C. melodus* represented 54% of the United States breeding population. This indicates a six percentage point drop in the United States Atlantic population from 2001 to 2006 (Haig et al. 2005, Elliott-Smith et al. 2009). Although both the United States Atlantic and Great Plains *C. melodus* populations increased from 2001 to 2006, the 15% increase in the Atlantic population was less than the Great Plains 33% increase in population (Haig et al. 2005, Elliott-Smith et al. 2009). Thus, the *C. melodus* populations in the Great Plains are improving faster than their Atlantic counterparts.

Although *C. melodus* nest on bare sand or pebble beaches (Burger 1987), chicks (and adults) take advantage of wetlands habitats, including bay tidal flats, salt and freshwater marshes, and herbaceous wetlands, for foraging. This gives them access to greater food sources than chicks foraging exclusively in ocean beach habitats. This advantage increases the chances of survival in *C. melodus* chicks (Loegering and Fraser 1995). The majority of chick mortality occurs in the first ten days after hatching, starvation being the main cause of death (Loegering and Fraser 1995). Chicks that forage exclusively on ocean beaches weigh less, eat at a lower rate, and have a higher mortality than chicks with access to interior wetlands for foraging (Loegering and Fraser 1995). Chicks with access to interior wetlands habitats have a 38% increased chance of survival in their first 25 days of life, than chicks without access to interior wetlands (Loegering and Fraser 1995). Chicks from 3-20 days old with access to interior wetland habitats choose to forage in those areas over ocean beaches (Loegering and Fraser 1995). Accordingly, this study focused on the foraging habitat of wetlands, since having access to wetlands is advantageous and critical to *C. melodus* and other shorebirds that use these transitional habitats.

## OBJECTIVES

The major goal of this analysis was to investigate and predict the effect of sea level rise on the habitat for *C. melodus*; specifically:

1. To organize all Geographic Information Systems (GIS) datasets needed to perform the analysis; and
2. To investigate prospective effects of sea level rise on wetlands within the predicted suitable habitat of *C. melodus* at time intervals of 30, 60, and 120 years using GIS.

## METHODS

We started with *C. melodus* predicted suitable habitat data (USGS GAP 2011), which is GIS data showing all potential suitable habitats for the species within an observed range. This includes all habitat types that *C. melodus* have been observed using, whether or not they may be optimal for their survival. Using 30-m (98-ft) land cover data, wetlands habitat (i.e., salt marshes, herbaceous wetlands, and tidal flats) within the predicted suitable habitat (USGS GAP 2011) was separated from other habitat types by cutting and reclassifying layers within GIS (ArcGIS 10x). The effects of sea level rise were then investigated only in wetlands within the predicted suitable habitat at each of the three locations (Figure 3; USGS GAP 2011).

In Figure 3, wetlands within *C. melodus* predicted suitable habitat are shaded dark orange. The light orange shaded areas represent all other habitat types that are not wetlands within the predicted suitable habitat, for example, oceanside beaches. Finally, the entire shaded area, consisting of both the dark and light orange colors, represents the entire predicted suitable habitat for *C. melodus*.

A 30-m (98-ft) North American digital elevation model (DEM) was used to display and analyze the height of the predicted sea level rise on the *C. melodus* suitable habitat. The DEM was cut to only the area of the wetlands within the predicted suitable habitat of *C. melodus* (dark orange shaded areas) generated from Figure 3. Elevational landscapes within *C. melodus* predicted suitable habitat but outside of the wetlands (light orange shaded areas) were considered not necessary for this analysis.

The net loss or gain of wetlands from sea level rise are predicted from the following equation, used to calculate the difference of wetland accretion from sea level rise (Stevenson 1986, Reed 1995, Cahoon 1997).

$$SL - WA = \text{elevation change}$$

SL = Average yearly relative sea level rise (Zervas 2009)
WA = Predicted average yearly wetland accretion (Reed et al. 2008)

The accretion rate is the rate at which wetlands vertically rise in elevation due to coastal geomorphological processes. This upward movement offsets the effect of

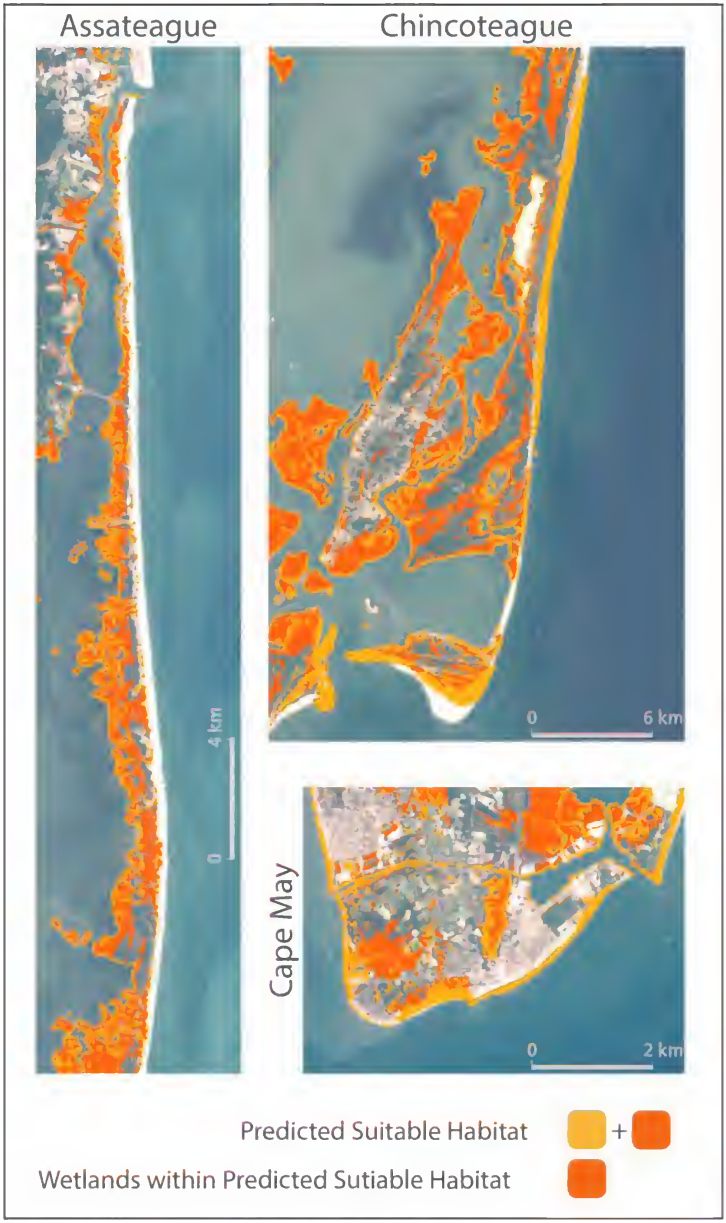


**Figure 3. "Predicted potential suitable habitat" and "wetlands within the predicted suitable habitat" for *C. melodus* at Assateague Island National Seashore, Chincoteague National Wildlife Refuge, and Cape May Point State Park.**

sea level rise. The equation is applied to three time intervals: 30, 60, and 120 years in the future (2006 baseline), with "SL" equaling the "low", "mean", or "high" yearly rates of sea level rise for each location. Thus, nine scenarios were investigated at each of the three locations.

The height differences, found with the elevation change equation, were then mapped. The results of the equation, for the nine scenarios at each of the three locations, were displayed using the 30-m (98-ft) DEM. All wetlands habitat within the *C. melodus* predicted suitable habitat could show a net loss, gain, or unchanged rate of elevational change.

If sea level rise was greater than the vertical accretion of wetlands, an elevation deficit was present. The wetland habitat within the predicted suitable habitat of *C. melodus* was mapped as submerged if its elevation was less than the elevation deficit. If the difference between the accretion of wetlands and relative sea level was equivalent, the wetland maintained its current state. If relative sea level rise was predicted to be less than the vertical accretion of wetlands, elevation deficit was not present. In this case, additional wetlands may be added to the existing wetland habitat within the predicted suitable habitat of *C. melodus*. If a gain of wetlands was predicted, it was discussed but not mapped. Thus, only negative effects (elevation deficit) to *C. melodus* were mapped.

The coastal wetlands within the predicted suitable habitat that were less than the height of the elevation deficit became isolated from the remaining coastal wetlands elevated higher than the elevation deficit. These were represented as submerged wetlands due to sea level rise and are no longer suitable for *C. melodus*. Maps were generated for three time intervals at each of the three locations. Thus, a total of nine maps were created. A raster calculation was performed for each scenario at each location within the GIS to obtain the exact net loss of wetlands.

The results for the yearly "mean" sea level rise and accretion rates for each location (Table 1) were averaged from data collected from previous years. The yearly "low" and "high" sea level rise rates were estimated by adding or subtracting the 95% confidence interval from the "mean" sea level rise. Subtracting the confidence interval from the "mean" sea level rise represents the range of potential variation in predicting the "low" sea level rise rate; adding the confidence interval to the "mean" sea level rise represents a range of potential variation of the "high" yearly sea level rise rate;. The 95% confidence interval was provided by the National Oceanic and Atmospheric Administration (Zervas 2009). Because both locations share the same barrier island and Chincoteague Bay, the associated rates of sea level rise and accretion for Assateague and Chincoteague were comparable (Zervas 2009). However, the same sea level rise

and accretion rates have different impacts on the two locations because the site-specific elevations differ.

**Table 1. Average annual sea level rise and accretion rates for each location (Reed et al. 2008, Zervas 2009).**

| | Sea Level Rise/Year (mm) | | | |
|---|---|---|---|---|
| | **Low** | **Mean** | **High** | **Accretion/Year (mm)** |
| Assateague Island NS | 4 | 5 | 7 | 2 |
| Chincoteague NWR | 4 | 5 | 7 | 2 |
| Cape May Point SP | 3 | 4 | 5 | 2 |

The three rates of sea level rise ("low," "mean," and "high") and accretion were multiplied by the three time intervals (30, 60, and 120 years from 2006) for each location (Table 2).

The elevation change equation was applied to the site-specific data (Table 3). A negative elevation change is one that is submerged due to sea level rise, and a positive elevation change is one that gained due to sea level rise.

The predicted net loss of area (Table 4) was derived from the raster calculation equation for each scenario from Figures 4, 5, and 6. To obtain percentages, the total count of pixels from each of the net loss scenarios was multiplied by $30^2$ (each pixel is 30 $m^2$ [323 $ft^2$]) and divided by the total area of wetlands within *C. melodus* predicted suitable habitat. The higher the percentage, the more submerged the wetlands for *C. melodus* became. The scenarios shown as 0% represent either a net gain or balanced result, since this effort focused on the loss of wetlands habitat for *C. melodus*.

## RESULTS

The three rates of sea level rise ("low", "mean", "high") and accretion were multiplied by the three time intervals (30, 60, and 120 years from 2006) for each location (Table 2). The further into the future, the greater is the sea level rise and the greater is the accretion.

Assateague Island National Seashore

The model predicts a sufficient net loss of wetlands habitat for *C. melodus* at Assateague after the first 30 years, even with the "low" rate of sea level rise (Figure 4). At Assateague, there is a predicted net loss of wetlands habitat for *C. melodus* of 26-44% in 30 years, 37-84% in 60 years, and 73-94% in 120 years (Table 4, Figure 7). A large portion of wetlands will be lost from the least

possible negative scenario, 30 years with the "low" sea level rise rate. However, Assateague loses most of its wetlands habitat within the predicted suitable habitat of *C. melodus* in 120 years even at the lowest projected sea level rise estimates. If any of the sea level rise rates are realized, even at the lowest, Assateague will lose the greatest wetlands habitat for *C. melodus* of the three locations in 120 years (Figures 4 and 7).

**Table 2. Predicted future sea level rise and accretion for 30, 60, and 120 years at each location.**

| | Sea Level Rise (mm) | | | |
|---|---|---|---|---|
| **Time Interval** | **Low** | **Mean** | **High** | **Accretion (mm)** |
| **30 years** | | | | |
| Assateague Island NS | 114 | 164 | 215 | 45 |
| Chincoteague NWR | 114 | 164 | 215 | 45 |
| Cape May Point SP | 100 | 122 | 144 | 120 |
| **60 years** | | | | |
| Assateague Island NS | 229 | 329 | 429 | 90 |
| Chincoteague NWR | 229 | 329 | 429 | 90 |
| Cape May Point SP | 199 | 244 | 288 | 240 |
| **120 years** | | | | |
| Assateague Island NS | 457 | 658 | 858 | 180 |
| Chincoteague NWR | 457 | 658 | 858 | 180 |
| Cape May Point SP | 398 | 487 | 576 | 480 |

Chincoteague National Wildlife Refuge

The "low" and "mean" net losses of wetlands habitat are negligible at Chincoteague in 30 years, but accelerate to a large net loss (29%) under a "high" rate of sea level rise in 30 years (Table 4). A large portion of the wetlands habitat of *C. melodus* at Chincoteague will be submerged between 119 and 170 mm (4.7 and 6.7 in) in the 30-year "mean" and "high" scenarios respectively (Table 3); therefore, the predicted net loss of wetlands habitat for *C. melodus* is small for 30 years and then drastically increases in 60 years (Table 4, Figure 5). At Chincoteague there is a predicted net loss of wetlands habitat for *C. melodus* of 4-29% in 30 years, 26-61% in 60 years, and 48-90% in 120 years (Table 4, Figure 7). Chincoteague experiences the majority of wetlands habitat loss for *C. melodus* at 60 and 120 years into the future. If the "mean" or "high" rate of sea level rise occurs, Chincoteague will lose the majority of its wetlands habitat for *C. melodus* in 120 years (Figures 5 and 7).

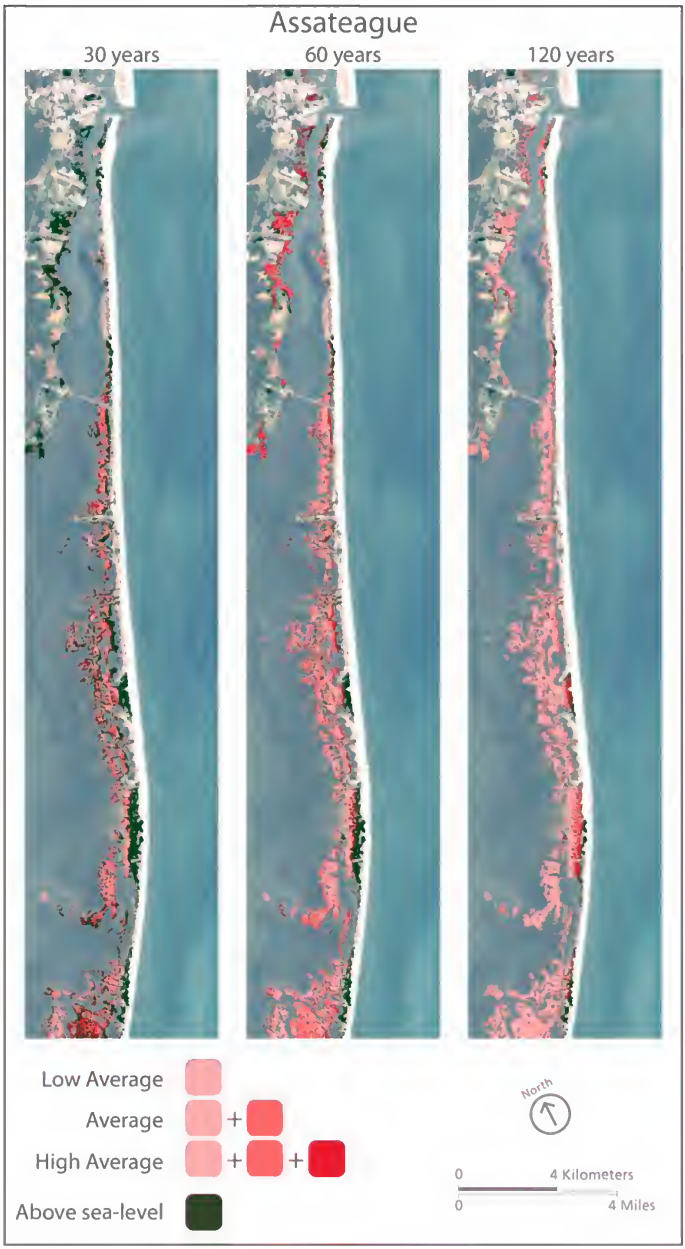


**Figure 4. Predicted net loss of wetlands within *C. melodus* predicted suitable habitat due to sea level rise for Assateague Island National Seashore.**

**Table 3. Predicted elevation change for 30, 60, and 120 years at each location after applying the elevation change equation.**

| | Predicted Elevation Change (mm) | | |
|---|---|---|---|
| **Time Interval** | **Low** | **Mean** | **High** |
| **30 years** | | | |
| Assateague Island NS | -69 | -119 | -170 |
| Chincoteague NWR | -69 | -119 | -170 |
| Cape May Point SP | 20 | -2 | -24 |
| **60 years** | | | |
| Assateague Island NS | -139 | -239 | -339 |
| Chincoteague NWR | -139 | -239 | -339 |
| Cape May Point SP | 41 | -4 | -48 |
| **120 years** | | | |
| Assateague Island NS | -277 | -478 | -678 |
| Chincoteague NWR | -277 | -478 | -678 |
| Cape May Point SP | 82 | -7 | -96 |

**Table 4. Predicted net loss of wetlands within *C. melodus* predicted suitable habitat due to submergence for 30, 60, and 120 years at each location.** Percentages created after applying data from Table 3 to a digital elevation model in the Geographic Information Systems.

| | Predicted Net Loss of Wetlands (%) | | |
|---|---|---|---|
| **Time Interval** | **Low** | **Mean** | **High** |
| **30 years** | | | |
| Assateague Island NS | 26 | 33 | 44 |
| Chincoteague NWR | 4 | 7 | 29 |
| Cape May Point SP | 0 | 4 | 5 |
| **60 years** | | | |
| Assateague Island NS | 37 | 63 | 84 |
| Chincoteague NWR | 26 | 40 | 61 |
| Cape May Point SP | 0 | 4 | 5 |
| **120 years** | | | |
| Assateague Island NS | 73 | 90 | 94 |
| Chincoteague NWR | 48 | 83 | 90 |
| Cape May Point SP | 0 | 4 | 5 |

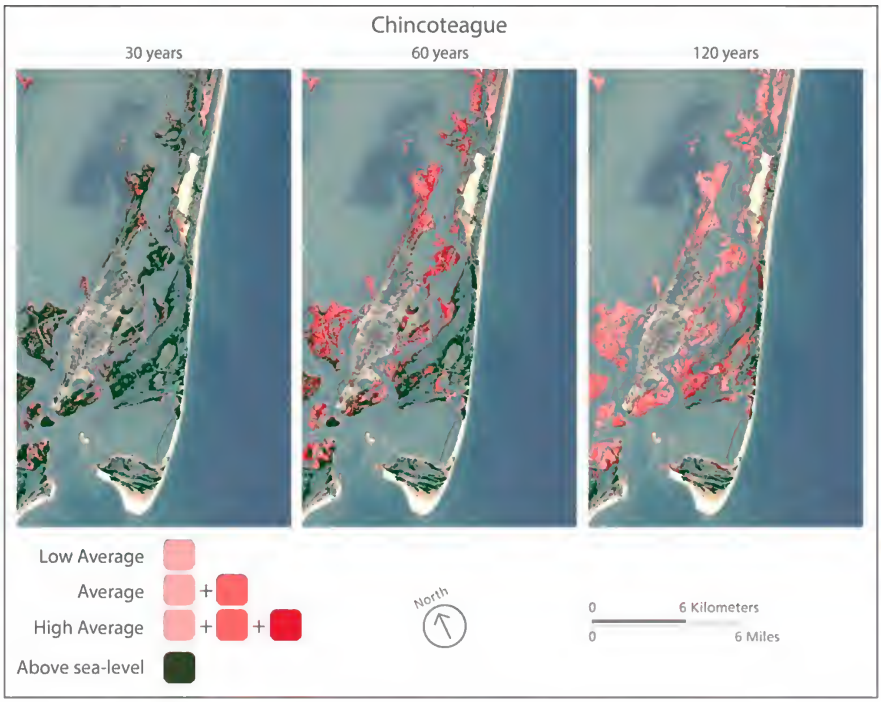


**Figure 5. Predicted net loss of wetlands within *C. melodus* predicted suitable habitat due to sea level rise for Chincoteague National Wildlife Refuge.**

Cape May Point State Park

With the "low" sea level rise rate, there is no predicted net loss at Cape May for all time intervals (Figures 6 and 7, Tables 3 and 4). In actual fact, Cape May gains wetlands habitat for *C. melodus* with the predicted "low" rate of sea level rise (Table 3); since this analysis focused exclusively on the negative impact of sea level rise on *C. melodus*, the wetlands habitat gained is not calculated. Under the most negative possible scenario, in 120 years and with the highest sea level rise rate, Cape May is predicted to experience a 5% net loss of wetlands habitat within the predicted suitable habitat of *C. melodus* (Table 4, Figure 7).

The predicted net loss of wetlands habitat due to sea level rise at both Assateague and Chincoteague will be at least twice the predicted net loss at Cape May for almost all sea level rise scenarios at each time interval, the exception being the 30-year "mean" compared to Chincoteague. Assateague and Chincoteague are at the greatest risk, Assateague being most at risk, while

**Figure 6. Predicted net loss of wetlands within *C. melodus* predicted suitable habitat due to sea level rise for Cape May Point State Park.**

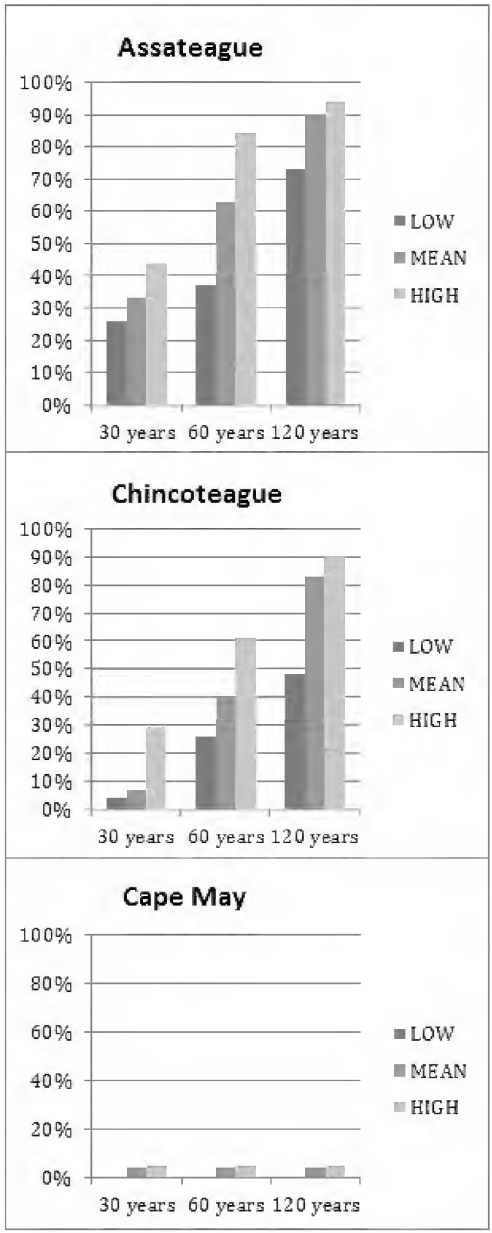


**Figure 7. The predicted net loss of wetlands (%) within *C. melodus* predicted suitable habitat submerged at Assateague Island National Seashore, Chincoteague National Wildlife Refuge, and Cape May Point State Park for every time interval and with all sea level rise rates.**

predictions for Cape May are the least. For Cape May, the yearly accretion rates generally keep pace with the yearly sea level rise.

## DISCUSSION

It is no coincidence that Assateague and Chincoteague have a higher yearly sea level rise and lower yearly accretion than Cape May (Table 2). Assateague and Chincoteague are part of the same barrier island and, as their wetlands face the Chincoteague Bay, their wetlands interiors are directly connected to the ocean. Cape May is not a barrier island and, therefore, its interior wetlands are not as directly affected by sea level rise as are the bayside wetlands of barrier islands. Cape May's accretion rates are projected to keep pace with the sea level rise rate. With the "low" rate of sea level rise, the accretion rate is higher than the sea level rise rate at Cape May. Thus, there will be more sediment vertically accreted by the wetlands than the sea level rise, resulting in a gain of wetlands in this scenario (Table 3).

The net loss at Assateague and Chincoteague is greater than the net loss at Cape May by at least a factor of two for each of the 60 and 120 year sea level rise scenarios. Assateague and Chincoteague are at the greatest risk, with Assateague being the most at risk, while Cape May has no risk of wetlands habitat loss for *C. melodus* from sea level rise, since Cape May's yearly accretion rates keep pace with yearly sea level rise rates.

Although serious negative impacts to wetlands habitat for *C. melodus* are predicted at both Assateague and Chincoteague, it is uncertain how *C. melodus* will respond. However, it is clear that the loss of dependable foraging habitat for chicks will not have a positive effect on *C. melodus*. Left unresolved is the uncertainty whether the species will be able to survive the predicted environmental changes that will reduce their foraging habitat. Assateague and Chincoteague will need the most conservation management to help preserve its wetlands. Cape May, on the other hand, should be encouraged to continue its wetlands conservation efforts, as *C. melodus* may need to use Cape May as a future stronghold since the species' breeding habitat is less at risk.

This sea level rise research illustrates the importance of site-specific management to help conserve habitat and survivorship for *C. melodus*. Site-specific risk identifiers need to be conducted with all possible threat factors for *C. melodus*. Conservation efforts should not be directly based on the linear data calculated showing the predicted loss of wetlands habitat with the predicted suitable habitat of *C. melodus*. Conversely, the purpose of this study is to prompt an increase in research, as the data reveals additional risk within its distribution. It is also important to point out that other shorebird species that have overlapping breeding ranges with *C. melodus* may not be as severely affected

from sea level rise, because many of these species do not have as specific nesting and foraging habitat restrictions as do *C. melodus*, as well as its overall very narrow total breeding range.

By concentrating the research on coastal wetlands foraging habitat, rather than the oceanside ones of *C. melodus*, this study exposes a lapse in current research and conservation efforts. Research shows that when *C. melodus* have access to foraging in wetlands habitat, adults and especially chicks choose to forage in those habitats over oceanside habitats (Patterson et al. 1991, Loegering and Fraser 1995, Elias et al. 2000). The majority of conservation efforts are still being focused on *C. melodus* nesting locations and not the availability of foraging habitats within their distribution. The study emphasizes the future effects of climate change on this vital foraging habitat of *C. melodus*. Current conservation efforts for *C. melodus* include the following: identification of nesting sites; public education; prevention of pedestrians, free-ranging pets, and off-road vehicles near nesting sites; and removal of foxes, raccoons, skunks, and other predators which live near the nesting locations (USFWS 2009). With these conservation enforcements, there has been an increase in populations of *C. melodus*. While these conservation strategies are important for the species recovery, there are few conservation efforts focusing on the foraging habitat of *C. melodus*. Furthermore, the state of *C. melodus* recovery is still fragile, as progress toward recovery could become slowed, halted, or reversed by even small decreases in survivability (USFWS 2009). This study examines how future changes from sea level rise will affect the wetlands foraging habitat of *C. melodus* and, therefore, the species' survivability. In order to establish conservation efforts for the wetlands foraging habitat of *C. melodus*, it is important to first implement site-specific studies on the effects of sea level rise, as different locations will have different risk factors.

## CONCLUSION

The goal of this analysis was to quantify potential effects of sea level rise on the foraging habitat of *C. melodus* along coastal wetlands. The habitat suitability model for *C. melodus* was used to assess the vulnerability of coastal areas to sea level rise predictions. The in situ validation of the model's observation of the foraging behavior of *C. melodus* confirmed that adult and chicks preferentially utilize the bayside wetlands habitats. Using GIS, Assateague Island National Seashore, Maryland, experienced the highest net loss of wetland habitat for every scenario within *C. melodus* predicted suitable habitat; Chincoteague National Wildlife Refuge, Virginia, experienced the second highest net loss (though a similar risk factor to Assateague); and Cape May Point State Park, New Jersey, experienced the lowest net loss. The loss of foraging wetlands at Assateague and Chincoteague approaches 50% for many of the scenarios and may be as high as 94%. An important outcome of this study is that different

locations within *C. melodus* predicted suitable habitat respond differently to the threat of sea level rise. Many areas within the predicted suitable habitat of *C. melodus* (e.g., barrier islands) are at greater risk than other locations based on their geomorphology and localized subsidence. It is important to recognize site-specific landscape features for any further implications regarding climatic impacts, including changes in weather patterns, food abundance, changes in community structure, and other indirect effects of climate change on *C. melodus* and perhaps other coastal species.

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# Fish Crows (*Corvus ossifragus*) Utilize Unusual Nesting Location and Habitat

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**ABSTRACT:** A Fish Crow (*Corvus ossifragus*) pair chose to locate their nest on roof joists inside an open-fronted equipment storage building on a treeless island 4.0 km (2.5 mi) offshore in central Chesapeake Bay. Eggs and nestlings of nearly 2000 colonial and solitary bird nests within 1.3 km (0.8 mi) of the nest may have been a convenient resource influencing the crows' selection of this unusual location.

Keywords: colonial waterbird nests, crow nest chronology, Fish Crow nest, island, nest inside building,

Despite the prevalence of Fish Crows (*Corvus ossifragus*) in developed and undeveloped coastal habitats, there is surprisingly little information available concerning their nesting habits (Potter et al. 1980, McNair 1984, McGowan 2001). Breeding bird atlas efforts that have focused in May and June, quiet and secretive crow habits near active nests high in trees, and difficulty in separating the species from American Crow (*Corvus brachyrhynchos*), may have contributed to the paucity of nesting information (Gross 1992, Clapp and Banks 1993, Hess et al. 2000). Coastal Plain Fish Crows most commonly associate with open habitats of field margins with forest, marshes, shorelines, and islands in the Mid-Atlantic area nesting from mid-March to early August (Stewart and Robbins 1958, Potter et al. 1980, Clapp and Banks 1993, Lauro and Tanacredi 2003). Fish Crows generally build their nests more than 8 m (26.2 ft) above ground in tall trees (Reimann 1941, Bent and Collaborators 1946, Meanley 1981, Russell 1996, McGowan 2001). Herein, I describe an active Fish Crow nest not far above ground on roof joists inside an open-fronted equipment storage building on treeless Poplar Island. Not only is this an unusual nest site and location, but perhaps the first documentation of a Fish Crow nesting inside a building structure.

## STUDY AREA

The Paul S. Sarbanes Ecosystem Restoration Project at Poplar Island is a cosponsored island restoration project of the Maryland Port Administration and the Baltimore District of the United States Army Corps of Engineers. The location of the project site in Chesapeake Bay is approximately 25 km (15.5 mi)

SSE of Annapolis, Maryland and 4.0 km (2.5 mi) offshore of the Delmarva Peninsula Coastal Plain. The site comprises a dike rising 3.0 m (9.8 ft) or more above mean low tide, extending for 11.9 km (7.4 mi) to form an elongated 461 ha (1139.2 ac) oval shape with exterior rock riprap protection. A seabed area, 4.3 km (2.7 mi) long and 0.8 km (0.5 mi) wide, remained after pumping dry the engulfed area. The hollow interior, initially subdivided by dikes into six containment cells ranging 12.6-131.9 ha (31-326 ac) apiece in 2002, subsequently received further subdivision increasing the number of containment cells (ranging 10.1-131.9 ha [25-326 ac] apiece) to 15 by 2007. Maintenance dredge materials from northern Chesapeake Bay shipping channels are deposited into the containment cells in a slurry of 80% seawater and 20% sediment substrates. After substrate settling and removal of seawater, the materials undergo drying treatments to remove remaining moisture which can take several years. Engineers then design artificial tidal wetlands for the dry materials, and contractors subsequently build and plant beneficial wetlands, then open them to tidewater. Some cells are similarly designated for creation of upland forest areas. Consequently, wildlife and location of a specific habitat within the construction site are constantly changing from one season and/or year to the next. Artificial herbaceous wetland habitat consisting primarily of smooth cordgrass (*Spartina alterniflora*) in the low marsh and saltmeadow cordgrass (*S. patens*) in the high marsh, plus sparse woody shrubs on two bird-nesting islands in the marsh, characterized about 22.7 ha (56 ac) in two cells in 2007. Additionally, fallow herbaceous vegetation grows on many dike slope areas throughout the site void of trees. In 2007, a complex of eight building structures on the north side of intersecting interior dike roads near the center of the island supported approximately 24 management and machinery-operator personnel working most days. The project site's inaccessibility and lack of terrestrial predators enabled the nesting of greater than 2000 waterbirds from 1 March through 30 September 2007, including several colonial nesting species (Erwin 2007, Reese 2007). Bird censuses from the dike complex of each cell are conducted biweekly throughout the year to assess utilization of project site habitats by transient, wintering, and nesting birds. Censuses during 2007 revealed the Fish Crow nest.

## OBSERVATIONS

Fish Crows are frequently seen in the vicinity of the building complex during warm months. I observed one there near an equipment storage building on censuses during 14 March-23 April 2007. The presence of two crows in that area on the 2 May census raised no suspicion. A Fish Crow carrying a stick on 15 May landed atop an inactive piece of construction equipment near an open-fronted, wooden-framed, steel-roofed and -sided equipment storage building (Figure 1). I found another crow inside the building on a partial nest being built at the confluence of roof rafters and supporting joists 3.5 m (11.5 ft) above

**Figure 1. Fish Crow (*Corvus ossifragus*) nest site, May-July 2007.** Poplar Island, Maryland (Photographed by Alexa Boos 2014).

**Figure 2. Fish Crow nest on roof joists inside building.** Poplar Island, Maryland, 12 July 2007 (Photographed by JGR).

ground (Figure 2). I observed the crows continuing to build a nest on 19 May, but saw no birds in the vicinity on 31 May. A crow appeared to be incubating and/or brooding young in the nest on 18 and 29 June and on 12 July. I found three nestlings near fledging-age standing on rafters by the nest during the 20 July census, while on 24 July no crows were observed at the nest site. Additionally, I found fledgling crow remains near a dumpster about 1.6 km (1 mi) south of the nest site on 20 July, but their origin was unknown. Censuses at the site during the previous six years and subsequent six years commonly found crows, but none were known to have nested on the island during those years.

## DISCUSSION

The unusual nesting location and nest support structure observed incidental to bird censuses provides additional insights regarding scarcely documented Fish Crow nesting chronology. McGowan (2001) writes: "This species remains little studied, despite its abundance … Nearly all publications include only incidental observations, and much information published … is unsubstantiated." McGowan goes on to note: "Fish Crows show little difference in timing of breeding with differing latitude …" Table 1 summarizes the most definitive Fish Crow nesting chronology from the eastern United States. The literature notes that nesting activity spans 169 days (16 March-31 August). Clutch size ranges 4-6 eggs (numerous authors); incubation period ranges 16-21 days (Reimann 1941, Potter et al. 1980, Gross 1992, McGowan 2001); and brooding ranges 21-26 days with fledging of young in 30-40 days (Reimann 1941, Potter et al. 1980, McGowan 2001). This sequence of events may require a minimum of 77 days.

Fish Crow activity in the vicinity of the building during the 133-day observation period (14 March-24 July) suggests the following approximations for timing and duration in nesting cycle events: nest construction beginning 7 May; egg laying in progress on 30 May; eggs hatching on 18 June; and fledging of young on 22 July. Nesting chronology took place within the nesting period range given in Table 1, with nesting events spanning approximately 77 days, consistent with the 77-day minimum derived from the literature. Timing dates of individual nesting events also coincide with those given for the Mid-Atlantic States.

I found one crow perched on inactive machinery outside the building and one on the nest during the 15 May census plus most censuses thereafter. Observer disturbance time involved briefly stopping outside the building, walking inside far enough to see nesting status, and quickly departing the area. The crow on the outside would utter a few low guttural notes before flying away while the crow on the nest appeared alert to my close proximity, but never flushed. My visits never elicited aggressive behavior by the crows. Knight et al. (1987) found similar behavior while at, and/or climbing to, tree nests in Madison, Wisconsin

**Table 1. Fish Crow (*Corvus ossifragus*) nesting chronology. NY:** McGowan 2001; **PA:** Brauning 1992, Gross 1992; **DE:** Hess et al. 2000; **MD:** Willis 1954, Stewart and Robbins 1958, Bridge and Riedel 1962, Bridge 1963, Bridge and Bridge 1964, Bystrak 1973, Ringler 1990, Russell 1996, McGowan 2001, Ellison 2010, (this documentation); **VA:** Meanley 1977, 1981, Clapp and Banks 1993, Clapp 1997, Rottenborn and Brinkley 2007; **NC:** Potter et al. 1980; **GA:** McNair 1984; **FL:** McGowan 2001. (*McGowan [2001] combined egg laying dates from 10 jurisdictions, including New York and Florida, when developing this egg-laying date range. The range is included here as an approximation for these two states.)

| State | Nesting Period | Most Active | BBA Safe Dates | Nest Building | Egg Laying | Incubation | Brooding | Fledging |
|---|---|---|---|---|---|---|---|---|
| **NY** | | | | 12 APR-9 JUN | 22 MAR-12 JUN* | 15 APR-19 JUN | 4 MAY-7 JUL | 1 JUN-7 AUG |
| **PA** | | | 1 MAY-30 AUG | | 14 MAY | 10 APR-24 MAY | | 9 JUN-30 JUL |
| **DE** | | | 10 MAY-31 AUG | | 12 APR-Late MAY | 20 APR-24 JUN | 1 MAY | |
| **MD** | 16 MAR-12 JUL | 16 MAY-26 JUN | 10 MAY-31 AUG | 15 MAY | 16 MAY-12 JUN | 30 MAR-8 JUN | 14 MAY-26 JUL | 3 JUL-12 JUL |
| **VA** | Mid APR-End JUL | 1 MAY-10 JUN | 10 MAY-15 AUG | 12 APR-1 MAY | 1 APR-2 JUN | 1 APR-25 JUN | 3 JUN-Early AUG | 29 MAY-1 JUL |
| **NC** | Late APR on Coast | | | 1 APR | | To Early JUN | | |
| **GA** | | 12 APR-13 JUN | | 12 APR-2 MAY | | 25 APR-3 MAY | 20 MAY-13 JUN | 13 JUN |
| **FL** | | | 1 APR-1 AUG | 25 MAR-12 JUN | 22 MAR-12 JUN* | 7 APR-30 APR | 26 APR-17 MAY | JUN |
| **Date Range** | 16 MAR-End JUL | 12 APR-26 JUN | 1 APR-31 AUG | 25 MAR-12 JUN | 22 MAR-12 JUN | 30 MAR-25 JUN | 26 APR-Early AUG | 29 MAY-7 AUG |
| **169 Day Nesting Period** | | | | | | | | |

where rural-nesting American Crows flew away while exhibiting no, or less, aggressive defense than urban-nesting crows.

Choosing a treeless island for nesting may be due to favorable and/or unfavorable influences on Fish Crow reproductive success. Nests of nearly 2000 geese, surface-feeding ducks, cormorants, egrets, Ospreys, gulls, terns, and blackbirds, plus many nests of other less abundant waterbird species and Diamond-backed Terrapins (*Malaclemys terrapin*) could be found within 1.3 km (0.8 mi) both north and south of the crow's nest. Proximity of this abundant resource of eggs and nestlings may be a strong incentive attracting opportunistic crows to choose the treeless island and building structure for nesting. Lauro and Tanacredi (2003) found Fish Crows selected nesting habitat closer to water with easy access and significantly shorter distances to eggs and nestlings of waterbird

colonies than sympatric nesting American Crows at Rockaway Peninsula, New York City.

Within the Poplar Island archipelago there are two small natural islands just east of the subject large treeless island. These islands contain about 8.9 ha (22 ac) of large Loblolly Pine (*Pinus taeda*) mixed with some deciduous species (Sweetgum [*Liquidambar styraciflua*], oak [*Quercus* spp.], maple [*Acer* spp.]) typical of regional Fish Crow nest sites. These forest areas are 1.5 km (0.9 mi) northeast and southeast of the crow nest building. The 7.3 ha (18 ac) of trees southeast of the nest building appears a favorable location for crow nesting with the availability of tree nest sites among approximately 100 Great Blue Heron (*Ardea herodias*) tree nests. Conversely, nests of a Great Horned Owl (*Bubo virginianus*) and two Bald Eagles (*Haliaeetus leucocephalus*), plus frequent sightings in the trees of American Crows and a Cooper's Hawk (*Accipiter cooperii*) suggest nest success on these islands could be tenuous, unpredictable, and life-threatening for the smaller Fish Crows.

Similar circumstances of an offshore island lacking nest site trees while hosting numerous waterbird nests and providing a quickly accessible supply of eggs and nestlings may be responsible for a Fish Crow nest with two eggs located atop a shrub on a small treeless island in Sinepuxent Bay along the Atlantic Coast near Ocean City, Maryland on 12 June 1983 (Hayes and Bennett 1985). Likewise, at Barren Island in Chesapeake Bay about 50 km (31.1 mi) south of Poplar Island on 19 June 1973, Armistead (1978) found a Fish Crow nest with one young located in a scraggly tree on an otherwise treeless island breached from Barren Island where over 1000 herons nested in the trees. Approximately 25 km (15.5 mi) further south in Chesapeake Bay on 19 June 1975, Armistead also found four large nestlings in a Fish Crow nest situated near the top of a ladder to an observation platform overlooking the marsh landscape of South Marsh Island west of Wenona, Maryland.

Finding an elevated structure providing support for a nest, concealment, and safety is problematic on a treeless island. Lack of tall woody plants with leaf cover for nesting dictates crows use any existing projections including artificial ones despite full day and night exposure to heat, chill, sunlight, and possible avian or reptilian predators. It appears the Poplar Island crows solved these problems by seizing the opportunity to utilize tree-branch-like joists and rafters beneath a concealing roof, well above the ground inside an open-fronted building. Crows cited above (Armistead 1978, Hayes and Bennett 1985) locating nests on a shrub, a short scraggly tree, and a ladder to a platform appear to have made a similar treeless island nest site location decision despite their chosen sites providing weak support plus little or no nest concealment or protection. Pearson et al. (1942), Bent and Collaborators (1946), Potter et al. (1980), Hess et al. (2000), and McGowan (2001) report Fish Crow nesting on wetland shrubs, a

crate in a marsh, and range-light housing, but give no details. Knight et al. (1987) note nesting American Crows "minimize energy expenditure and disruption of their activity patterns by habituating to human presence." Lauro and Tanacredi (2003) similarly note "… Fish Crows are coastal specialists while American Crows are human habitation specialists, possibly minimizing interspecific interaction and facilitating their existence." Perhaps these behaviors have application with the Fish Crows nesting in the building, on human structures, or on low natural projections.

Finally, I have no explanation why the crows did not return in subsequent years to nest in the building despite the unique artificial nest support, protective overhead cover, nearby abundant food source, and assumed successful nesting in a previous year. McGowan (2001) notes Fish Crows tolerate human traffic near nests, but abandon with researchers' repeated climbs to tree nests. The observer briefly viewed the nest from the ground (as in Figure 2 with young in the nest) at two-week intervals which never seemed to perturb the bird on the nest; however the building is sometimes subject to workmen procuring and returning tools and equipment, and construction equipment noise. Perhaps some of these activities discouraged the crows' subsequent building use for nesting.

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# Fish Crows (*Corvus ossifragus*) Prey on Eggs of Virginia Rail (*Rallus limicola*) and Common Tern (*Sterna hirundo*)

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**ABSTRACT:** Game camera photographs captured individual Fish Crows (*Corvus ossifragus*) preying on eggs at active nests of Virginia Rail (*Rallus limicola*) and Common Tern (*Sterna hirundo*) found in smooth cordgrass (*Spartina alterniflora*) tidal marsh in the Poplar Island archipelago in central Chesapeake Bay. This is the first photographic documentation of Fish Crow predation on eggs of these species.

Keywords: Common Tern eggs, Fish Crow predator, island, smooth cordgrass, tidal marsh, Virginia Rail eggs

The omnivorous Fish Crow (*Corvus ossifragus*) feeds on seeds, berries, insects, mussels, crabs, fish, small mammals, and various forms of carrion (Barrows 1888, Fargo 1927, Bent and Collaborators 1946). Fish Crows are most notorious for preying on bird and turtle eggs, and frequently focus their activities and/or nest among colonial nesting waterbird colonies (Burger and Hahn 1977, Montevecchi 1977, Miller and Burger 1978, Shields and Parnell 1986, Bildstein et al. 1990, Post and Seals 1991, Voigts 1999, Lauro and Tanacredi 2003). Here, we provide photographic evidence of Fish Crows preying on eggs of Virginia Rail (*Rallus limicola*) and Common Tern (*Sterna hirundo*) in unattended active nests.

## STUDY AREA

The Paul S. Sarbanes Ecosystem Restoration Project at Poplar Island (PSERPPI) is a cosponsored island restoration project of the Maryland Port Administration and the Baltimore District of the United States Army Corps of Engineers. The location of the project site in Chesapeake Bay is approximately 25 km (15.5 mi) south-southeast of Annapolis, Maryland and 4.0 km (2.5 mi) offshore of the Delmarva Peninsula Coastal Plain. PSERPPI comprises a dike rising 3.0 m (9.8 ft) or more above mean low tide, extending for 11.9 km (7.4 mi) to form an elongated 461 ha (1139.2 ac) oval shape with exterior rock riprap protection. A

seabed area, 4.3 km (2.7 mi) long and 0.8 km (0.5 mi) wide, remained after pumping dry the engulfed area. The hollow interior, initially subdivided by dikes into six containment cells ranging 12.6-131.9 ha (31-326 ac) apiece in 2002, subsequently received further subdivision increasing the number of containment cells (ranging 10.1-98.3 ha [25-243 ac] apiece) to 17 by 2014. Maintenance dredge materials from northern Chesapeake Bay shipping channels are deposited into the containment cells for materials drying management and eventual engineer-designed and contractor-built-and-planted beneficial tidal wetlands and upland forest. Several years are required for completion of these processes. Consequently, wildlife and location of a specific habitat within the construction site are constantly evolving from one season and/or year to the next. Artificial herbaceous wetland habitat consisting primarily of smooth cordgrass (*Spartina alterniflora*) in the low marsh and saltmeadow cordgrass (*S. patens*) in the high marsh, plus sparse woody shrubs on two bird-nesting islands in the marsh, characterized about 71.3 ha (176.2 ac) in five cells in 2014. Additionally, fallow herbaceous vegetation grows on many dike slope areas throughout the site, while only a few small trees exist largely in close proximity to buildings. A complex of ten building structures on the north side of intersecting interior dike roads near the center of the island support approximately 30 management and machine-operator personnel working most days. Within the archipelago are two uninhabited islets (3.5 ha [8.7 ac] and 14 ha [34.6 ac]) from 61 m (200 ft) to 343 m (1125 ft) east of PSERPPI. Forest and tidal marsh comprise these islets, while both also host colonial nesting waterbirds. The archipelago's inaccessibility and lack of terrestrial predators enabled nesting of greater than 3000 birds from 1 March through 30 September 2014, including several colonial nesting species (McGowan et al. 2013, Prosser 2013, Reese 2013, McGowan and Callahan 2014, Prosser [2014 draft]).

## OBSERVATIONS

In early June 2013, while assisting United States Geological Survey biologists conducting Common Tern nest monitoring, United States Fish and Wildlife Service (USFWS) personnel placed several motion-activated game cameras within a mixed colony of Common Tern and Forester's Tern (*Sterna forsteri*) nests located on drift debris in one of the islet marshes. Cameras were placed randomly in the colony, and individually positioned to monitor a maximum number of active nests to capture predator events. Data storage cards from each camera were checked, replaced, and images downloaded weekly until colony nesting activities ceased. Some camera images show crows within the colony while a 3 July 2013 image shows a Fish Crow beside a nest with a Common Tern egg in its bill (Figure 1).

On 27 June 2014, University of Maryland personnel found a Virginia Rail nest with seven eggs while working among a homogeneous *Spartina alterniflora*

**Figure 1. Fish Crow beside a Common Tern (*Sterna hirundo*) nest with a tern egg in its bill.** Poplar Island archipelago (uninhabited islet), 3 July 2013 (Game camera image).

**Figure 2. Fish Crow (*Corvus ossifragus*) beside the Virginia Rail (*Rallus limicola*) nest with a rail egg in its bill.** Poplar Island archipelago (PSERPPI), 7 July 2014 (Game camera image).

portion of an engineer-designed, and contractor-built-and-planted, tidal wetland in the central northeast portion of PSERPPI. The nest appeared unchanged on 30 June 2014, when USFWS personnel placed a motion-activated game camera in the wetland approximately 1.5 m (4.9 ft) from the nest to monitor nest success. Camera images during 30 June-9 July 2014 showed that at least two rail eggs hatched. The camera also captured an image on 7 July 2014 of two Fish Crows beside the nest, one of which had a rail egg in its bill (Figure 2).

## DISCUSSION

Of the 26 waterbird species nesting in the Poplar Island archipelago, Fish Crows reportedly prey on 12 of them (Table 1). Other studies (Maxwell and Kale 1977, Reese 1977, Parsons 1995) have implied Fish Crow predation on eggs of Great Blue Heron (*Ardea herodias*), Great Egret (*A. alba*), Snowy Egret (*Egretta thula*), Cattle Egret (*Bubulcus ibis*), and Osprey (*Pandion haliaetus*), but provide no substantiating evidence. Additionally, other waterbird species, Anhinga (*Anhinga anhinga*), Brown Pelican (*Pelecanus occidentalis*), Little Blue Heron (*Egretta caerulea*), White Ibis (*Eudocimus albus*), Clapper Rail (*Rallus crepitans*), Wilson's Plover (*Charadrius wilsonia*), Piping Plover (*C. melodus*), Laughing Gull (*Leucophaeus atricilla*), and Black Skimmer (*Rynchops niger*), are reported to have their eggs preyed on by Fish Crow (Fargo 1927, Forbush and May 1955, Meanley 1955, Dusi and Dusi 1968, Burger and Hahn 1977, Montevecchi 1977, Shields and Parnell 1986, Bildstein et al. 1990, Lauro and Tanacredi 2002).

Burger and Gochfeld (1991) observed Fish Crows preying on Common Tern eggs; our observations are the first such documentation for Virginia Rail, plus the first photographic evidence of predation on both species. Among the thousands of nesting waterbirds on the island, only 46% of the species are known to be preyed upon by Fish Crow which may equate to future opportunities to confirm other species preyed upon by the opportunistic crows (Table 1).

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**Table 1. Waterbird species nesting in the Poplar Island archipelago with citations for species known to be preyed upon by Fish Crows (*Corvus ossifragus*).**

| Nesting Waterbird Species in the Archipelago | Citations of Known Fish Crow Predation |
|---|---|
| Canada Goose, *Branta canadensis* | |
| American Black Duck, *Anas rubripes* | |
| Mallard, *Anas platyrhynchos* | |
| Double-crested Cormorant, *Phalacrocorax auritus* | Forbush and May 1955; Post and Seals 1991 |
| Great Blue Heron, *Ardea herodias* | |
| Great Egret, *Ardea alba* | Parsons 1995 |
| Snowy Egret, *Egretta thula* | |
| Cattle Egret, *Bubulcus ibis* | Dusi and Dusi 1968 |
| Black-crowned Night Heron, *Nycticorax nycticorax* | Burger and Hahn 1977 |
| Glossy Ibis, *Plegadis falcinellus* | Burger and Hahn 1977; Miller and Burger 1978 |
| Osprey, *Pandion haliaetus* | |
| Northern Harrier, *Circus cyaneus* | |
| Virginia Rail, *Rallus limicola* | (this documentation) |
| Common Gallinule, *Gallinula chloropus* | |
| Killdeer, *Charadrius vociferus* | |
| American Oystercatcher, *Haematopus palliatus* | Forbush and May 1955; Denmon et al. 2013 |
| Black-necked Stilt, *Himantopus mexicanus* | |
| Willet, *Tringa semipalmata* | Fargo 1927 |
| Herring Gull, *Larus argentatus* | |
| Great Black-backed Gull, *Larus marinus* | |
| Common Tern, *Sterna hirundo* | Burger and Gochfeld 1991; (this documentation) |
| Forster's Tern, *Sterna fosteri* | |
| Least Tern, *Sternula antillarum* | Burger and Gochfeld 1991; Voigts 1999 |
| Seaside Sparrow, *Ammodramus maritimus* | |
| Red-winged Blackbird, *Agelaius phoeniceus* | Mitchell et al. 1996 |
| Common Grackle, *Quiscalus quiscula* | Fink 1975 |

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*Maryland Birdlife* 64(1):58-60

# Correcting the Record: Boat-tailed Grackle (*Quiscalus major*) Breeding in Kent County, Maryland

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Edgar A. Small (1883) of Hagerstown, Maryland, published the following note on Boat-tailed Grackles (*Quiscalus major*) in *Ornithologist and Oölogist*:

> "BOAT-TAILED GRACKLE. — Where is the northern limit of this bird's habitat? They are common in the Chesapeake Bay in suitable localities as far north as Kent Co., Md. My friend E. G. Nicewaner has collected a number of sets of eggs at Pomona in the latter county. Fish Crows are also common there. — *Edgar A. Small, Hagerstown, Md.*"

Small's report was the authority for including Kent County, Maryland within the breeding range of this species in *Birds of Maryland and the District of Columbia* (Stewart and Robbins 1958). Subsequently, Stewart and Robbins (1958) became the authority for citations in other publications. The first Maryland breeding bird atlas (Robbins and Blom 1996), conducted from 1983 through 1987, reports confirmed or probable breeding for Boat-tailed Grackle in only five counties: Dorchester, St. Mary's, Somerset, Wicomico, and Worcester; the historic Kent County record is shown on the "Breeding Distribution, 1958" map (O'Brien 1996). The second breeding bird atlas (Ellison 2010a), conducted from 2002 through 2006, reports breeding in the same five counties. In summary, it states "there was little change in the broad outlines of the nesting range" in Maryland, but the historic Kent County "breeding" record is not mentioned (Ellison 2010b).

Small's report for Pomona has always been a geographic anomaly, but long overlooked was his correction ([Small] 1884) which appeared under the heading "Correspondence":

> "BOAT-TAILED GRACKLE. (O. and O., Vol. VIII, page 76.) *Edgar A. Small, Hagerstown, Md.*, asks us to correct his note as to the breeding of this bird in Kent County, Md. His informant only saw the birds, and does not appear to have satisfactorily identified their nests."

Therefore, Kent County, Maryland should be removed from the documented breeding range of Boat-tailed Grackle.

Some comments on these two observers may be of interest. Edgar Albert Small was a native of Hagerstown, Maryland. He was born 8 February 1865, and died 23 April 1884, at the age of 19 years, 2½ months (Hahn 2012, Anonymous 1884a). It was observed that he "… was widely known as a young ornithologist

of much promise" (Allen 1884). "Mr. Small was well known to many of our readers as an ardent ornithologist, oölogist, and artist, in all of which he excelled to a wonderful degree …" (Anonymous 1884a). Edgar A. Small collected bird specimens and eggs (specimens deposited in the National Museum of Natural History, Smithsonian Institution, Washington, DC) and published several short articles in his brief career. He submitted numerous observations to the North American Bird Phenology Program (Jessica Zelt [Program Coordinator, United States Geological Survey, Patuxent Wildlife Research Center, Beltsville, Maryland], in litt.). Some of his bird observations are included in the Frank Coates Kirkwood (1895) landmark publication, A List of the Birds of Maryland. His father, Albert Small (1840-1898), was a prominent lawyer in Hagerstown (Anonymous 1884b).

Small was reporting the observations of his friend Mr. E. G. Nicewaner of Baltimore, Maryland (Small 1883). The full given name of "E. G. Nicewaner" is uncertain, but it can be surmised. It is probably "Edwin Gazelle". There is a Gazelle Nicewaner, age 14 years (born circa 1866) listed in the United States Census (1880), indexed as "Nuiwaner." (It appears that the family surname was variously spelled [or misspelled] in a variety of records as Nicewaner, Nicewarner, and Nuiwaner.) In the 1880 census, Gazelle is listed with his parents in Baltimore City; his father, Ephraim B. Nicewaner, was a watchmaker. In *R. L. Polk & Co.'s Baltimore City Directory for 1889* (Sheriff 1889) there is a "Nicewaner E B, watchmkr" listed at "329 n Gilmor". At the same address is a "Nicewaner Edwin G", the relationship is unspecified, but presumably this is his son living at home, who would have been 22 or 23 years of age in 1889. Further evidence of this father-son relationship are found in *Forest and Stream* (Anonymous 1890) where "Mr. E. B. Nicewaner, of Baltimore" provides excerpts from a letter received from "his son, E. G. Nicewaner" in which E. G. tells of the mammals, fish, and birds that are present at his place of employment in the "Alleghany Mountains" near Johnstown, Pennsylvania.

Collecting bird eggs was a popular hobby for young men in that era and the Boat-tailed Grackle observations were probably made on such a foray during the summer of 1883.

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# 2013 Spring Raptor Migration at Fort Smallwood Park, Anne Arundel County, Maryland

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The total of 11,320 raptors in the spring of 2013 surpassed last year's total by nearly 4000 and was more than 1000 above the ten-year average (2003-2012) (Table 1). Vultures comprised most of the recovery with record-high counts of 553 Black Vultures and 7354 Turkey Vultures, smashing their previous highs. The dramatically low counts of Sharp-shinned and Cooper's Hawks were unexpected. The maximum daily count of Sharp-shinned Hawks was only 84, the lowest on record, and the seasonal count of 845 was the lowest since 1982 when there were only 71 hours of coverage. The seasonal Cooper's Hawk total of 271 was the lowest since 1992, again when the coverage was much reduced. Mississippi Kites rebounded to set both daily and seasonal highs, at 9 and 16 respectively. Bald Eagles capped out the season at 168, which was 38 over the previous high count. Coverage for the season was more than adequate at 555 hours, 49 hours above the five-year average (2008-2012).

February: What a difference a day makes! A cliché, admittedly, but applied with pleasure to the 2013 season. Seasonal coverage began on 15 February 2013, and an obliging Red-tailed Hawk flew by. February turned out to be prophetic with 222 raptors counted, the most in that month since 1998. Turkey Vultures beat their ten-year average by the greatest margin, but there were also healthy counts of Black Vultures, Bald Eagles, and Red-shouldered and Red-tailed Hawks. On 28 February, the first Ospreys (2) were observed, tying last year's date for early arrival.

March: Strong numbers continued throughout March, with vultures again producing tallies significantly above their ten-year averages, along with Red-shouldered Hawks and Ospreys. However, Sharp-shinned and Cooper's Hawks were down by 43% and 58% respectively. Also down were Northern Harriers (50%), Red-tailed Hawks (36%), and American Kestrels (51%). A special appearance on 11 March was a Golden Eagle, a probable adult. Single Golden Eagles have now been observed in four of the last five seasons.

April: April's numbers were somewhat below average (by 400+ out of 4700+), although vulture and Bald Eagle tallies were again robust. But Sharp-shinned and Cooper's Hawks were again down, this time by 57% and 39% compared to their ten-year averages. Northern Harriers continued to be far below average and

**Table 1. 2013 Monthly and Seasonal Count Summaries, Five-year Count Averages (2008-2012), and Ten-year Count Averages (2003-2012).** (Due to the rounding off of the individual five-year and ten-year species averages, they do not necessarily add up to the total five-year and ten-year averages.)

| Survey Days and Hours | Feb 2013 | Mar 2013 | Apr 2013 | May 2013 | Jun 2013 | Total 2013 | Five-year Average (2008-2012) | Ten-year Average (2003-2012) |
|---|---|---|---|---|---|---|---|---|
| Survey Days | 8 | 26 | 27 | 25 | 7 | 93 | 90 | 85 |
| Survey Hours | 30.00 | 135.25 | 182.75 | 181.75 | 25.25 | 555 | 506 | 466 |
| **Species** | | | | | | | | |
| Black Vulture | 12 | 247 | 242 | 52 | 0 | 553 | 400 | 312 |
| Turkey Vulture | 177 | 3558 | 2650 | 941 | 28 | 7354 | 5316 | 5012 |
| Osprey | 2 | 163 | 281 | 82 | 4 | 532 | 478 | 477 |
| Swallow-tailed Kite | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mississippi Kite | 0 | 0 | 0 | 16 | 0 | 16 | 6 | 5 |
| Bald Eagle | 6 | 24 | 45 | 90 | 3 | 168 | 120 | 92 |
| Northern Harrier | 0 | 8 | 51 | 12 | 0 | 71 | 97 | 113 |
| Sharp-shinned Hawk | 1 | 63 | 706 | 75 | 0 | 845 | 1807 | 2039 |
| Cooper's Hawk | 4 | 59 | 177 | 31 | 0 | 271 | 432 | 488 |
| Northern Goshawk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Red-Shouldered Hawk | 11 | 164 | 80 | 2 | 0 | 257 | 190 | 180 |
| Broad-winged Hawk | 0 | 0 | 114 | 526 | 5 | 645 | 763 | 787 |
| Swainson's Hawk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Red-tailed Hawk | 9 | 69 | 125 | 45 | 1 | 249 | 233 | 273 |
| Rough-legged Hawk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Golden Eagle | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| American Kestrel | 0 | 50 | 221 | 2 | 0 | 273 | 267 | 353 |
| Merlin | 0 | 8 | 26 | 5 | 0 | 39 | 54 | 63 |
| Peregrine Falcon | 0 | 0 | 2 | 4 | 0 | 6 | 5 | 5 |
| Unidentified Accipiter | 0 | 3 | 7 | 4 | 0 | 14 | 15 | 15 |
| Unidentified Buteo | 0 | 4 | 2 | 2 | 0 | 8 | 12 | 10 |
| Unidentified Eagle | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 4 |
| Unidentified Falcon | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| Unidentified Raptor | 0 | 8 | 1 | 8 | 0 | 17 | 17 | 21 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **222** | **4429** | **4731** | **1897** | **41** | **11,320** | **10,220** | **10,251** |

Broad-winged Hawk numbers were also depressed. On the other hand, 2 April was a delight when the daily count topped 1000 for the first time since 2009. Turkey Vultures made up the bulk of the 1021 total for the day.

May: Numbers rebounded to above average in May, with similar trends in species counts as in April except that Mississippi Kites, Red-tailed Hawks, and immature Broad-winged Hawks made strong showings. The first Mississippi Kites (2) were counted on 9 May, but 21 May was the day of good fortune, when between 1200 and 1400 hours, 9 flew past the hawk watch, eclipsing the previous record of 6. By the time the season ended, 16 had been counted, one higher than the previous record.

June: Seven days of observation in June produced an above-average 41 raptors, dominated by Turkey Vultures.

Other raptor highlights included a bathing Osprey which dove completely under the water at least seven times, each time surfacing to forcefully shake its body before circling to dive again. A local Peregrine Falcon appeared several times, hunting and displaying awesome flying maneuvers.

On the non-raptor side, there were four new Park species: White-winged Crossbill (Park species #259), which lingered in multiple numbers over the winter, a Cerulean Warbler (#260) on 27 April, and an Alder Flycatcher (#261) and a Nashville Warbler (#262) on 16 May. Additionally there was a huge blackbird flight on 27 February with approximately 5000 Red-winged Blackbirds and 6000 Common Grackles; 2 Surf Scoters on 21 March; 79 Horned Grebes on 29 March; about 5000 Tree Swallows on 1 April; a Virginia Rail on 20 April; Sandhill Cranes, 2 on 23 and 24 April and 1 on 11 May; and a Black Scoter on 31 May. The statewide May Count took place on 11 May and yielded besides the crane, a Black Tern, 1000+ Blue Jays, 13 warbler species, 181 Bobolinks and an impressive total of 102 species observed in the park or nearby. Lastly, Great Horned Owls nested in the Park, with two young seen repeatedly, and Warbling Vireos likely nested for the first time ever.

This season surely couldn't have been as productive without everyone who came to help compiler Sue Ricciardi, especially Hal Wierenga and Lynn Davidson, Nancy Magnusson, Ralph Geuder, Bob Rineer, Bill Hubick, Andy Smith, Mary Jane McMillan, Cal and Bud Orvis, Ranger Matt Grey, Dan Stewart, Dan Haas, Andy and Judy Higgs, Linda Baker, John Hoffman, Dave Grove, and Harry and Liz Armistead. The Park staff is owed many thanks for their continued and excellent support.

Every season is different, unpredictable, and manifests the spectacle of migration. What will happen next year? Reread the first sentence and get ready for the years to come.

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# 2014 Spring Raptor Migration at Fort Smallwood Park, Anne Arundel County, Maryland

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It seemed like the spring 2014 season would never get started. Harsh winter weather kept observers away until late in February, about a week later than usual. Not only that, the migrant flight was also delayed with nine of the twelve more common raptors not observed until two to fourteen days past their median arrival dates. The flight lagged until well into March, but finally did rebound and overall the season was about average. The total number of raptors counted was 10,220, above the 5-year (2009-2013) average of 10,166, but below the 10-year (2004-2013) average of 10,373 (Table 1). Total numbers of days and hours of coverage were 84 and 437 respectively, well below the 5-year averages of 91 and 517. The deficits here are also mostly weather-related. Interestingly, season totals for most species were either up or down by more than 15% compared to their 10-year averages. Up were Black Vulture, Mississippi Kite, Bald Eagle, Red-shouldered Hawk, American Kestrel, and Merlin. Down were Osprey, Northern Harrier, Sharp-shinned Hawk, and Cooper's Hawk.

February: The first day of the season was 22 February 2014, although no migrants were seen. At February's end there had been only 4 days and 13 hours of coverage and 68 raptors counted, all paltry numbers.

March: Early March was much the same, weather-wise and count-wise. Five days of coverage in the first week of March resulted in just 11 raptors, all Turkey Vultures and all counted on 5 March. The month's numbers remained anemic until 22 March, when all heaven broke loose and 1628 raptors were tallied, the second highest daily total and the earliest 1000+ day in a season on record. That single day accounted for more than half of March's raptors. In addition, high daily counts for the season were recorded for Black Vulture, Turkey Vulture (second highest ever), Cooper's Hawk, Red-shouldered Hawk, and Red-tailed Hawk.

April: Remarkably, on 5 April, a second 1000+ day occurred when observers spotted 1209 migrants, including high daily counts for Osprey, Northern Harrier, and best of all, American Kestrel with 260 observed. The flight spilled over into the next day resulting in a two-day total of almost 1700 raptors. The last week of April was especially productive with several days of good counts, notably

**Table 1. 2014 Monthly and Seasonal Count Summaries, Five-year Count Averages (2009-2013), and Ten-year Count Averages (2004-2013).** (Due to the rounding off of the individual five-year and ten-year species averages, they do not necessarily add up to the total five-year and ten-year averages.)

| Survey Days and Hours | Feb 2014 | Mar 2014 | Apr 2014 | May 2014 | Jun 2014 | Total 2014 | Five-year Average (2009-2013) | Ten-year Average (2004-2013) |
|---|---|---|---|---|---|---|---|---|
| Survey Days | 4 | 22 | 25 | 25 | 8 | 84 | 91 | 88 |
| Survey Hours | 13.25 | 100.75 | 152.5 | 139 | 31 | 436.5 | 517 | 489 |
| **Species** | | | | | | | | |
| Black Vulture | 3 | 121 | 176 | 103 | 0 | 403 | 405 | 349 |
| Turkey Vulture | 64 | 2383 | 2312 | 1036 | 9 | 5804 | 5592 | 5331 |
| Osprey | 0 | 72 | 231 | 57 | 8 | 368 | 468 | 478 |
| Swallow-tailed Kite | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Mississippi Kite | 0 | 0 | 0 | 13 | 0 | 13 | 9 | 6 |
| Bald Eagle | 0 | 7 | 62 | 63 | 23 | 155 | 133 | 103 |
| Northern Harrier | 0 | 5 | 60 | 19 | 0 | 84 | 82 | 110 |
| Sharp-shinned Hawk | 0 | 74 | 942 | 337 | 0 | 1353 | 1592 | 1900 |
| Cooper's Hawk | 0 | 66 | 196 | 61 | 0 | 323 | 395 | 465 |
| Northern Goshawk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Red-Shouldered Hawk | 0 | 133 | 105 | 0 | 1 | 239 | 203 | 187 |
| Broad-winged Hawk | 0 | 0 | 207 | 439 | 2 | 648 | 707 | 712 |
| Swainson's Hawk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Red-tailed Hawk | 1 | 135 | 137 | 28 | 0 | 301 | 233 | 268 |
| Rough-legged Hawk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Golden Eagle | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 |
| American Kestrel | 0 | 33 | 392 | 5 | 0 | 430 | 238 | 349 |
| Merlin | 0 | 3 | 68 | 10 | 0 | 81 | 52 | 61 |
| Peregrine Falcon | 0 | 0 | 0 | 1 | 0 | 1 | 5 | 5 |
| Unidentified Accipiter | 0 | 2 | 4 | 0 | 0 | 6 | 15 | 15 |
| Unidentified Buteo | 0 | 1 | 3 | 2 | 0 | 6 | 11 | 11 |
| Unidentified Eagle | 0 | 0 | 2 | 0 | 0 | 2 | 4 | 0 |
| Unidentified Falcon | 0 | 0 | 1 | 1 | 0 | 2 | 0 | 4 |
| Unidentified Raptor | 0 | 0 | 0 | 0 | 0 | 0 | 18 | 20 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **68** | **3035** | **4898** | **2176** | **43** | **10,220** | **10,166** | **10,373** |

26 April, when 608 raptors, including 222 Sharp-shinned Hawks were spotted. Still, by the end of April, the total count was below the 10-year average by more than 1000 raptors.

May: Happily, May made up for most of the difference with a surplus of over 800 raptors compared to the 10-year average, and healthy counts of Turkey Vultures, Bald Eagles, Sharp-shinned and Broad-winged Hawks, plus the season's allotment of 13 Mississippi Kites.

June: June featured 8 days of coverage. The dominant migrant was Bald Eagle; in fact, on 2 June, 19 Bald Eagles were tallied, a new high daily record.

Besides the highlights above, there were several other raptor goodies. A pair of Ospreys nested on the border of the Park for the second year in a row (requiring vigilance in attempting to count migrant Ospreys). A pair of courting Cooper's Hawks put on a grand show which included a bout of talon-grappling. Then there was the Eastern Kingbird that just couldn't resist its naturally feisty inclinations and went after a Merlin. The kingbird attacked the "seemingly bewildered" Merlin mercilessly until it obediently exited the area.

There were significant observations of passerines as well as raptors. Of course, the biggest event in that category was the appearance on 12 and 13 April of new Park species #263, a Scissor-tailed Flycatcher. Kojo Baidoo, a 12-year-old birder, made the discovery! The day before, 17 migrating Palm Warblers were observed near the Fort itself. Earlier in the season, on 10 March, a huge waterfowl movement took place: 3960 Canada Geese in 30 skeins were counted heading north. Bill Hubick observed new Park species #264 on 4 May, a Wilson's Phalarope. On 6 May, a Sora foraged at the edge of the pond, very close to the fence and to observers. Four days later, a Red-headed Woodpecker made a welcome visit. Finally, Warbling Vireos, which had never bred at the Park before 2013, returned to nest for a second year.

The compiler, Sue Ricciardi, was fortunate to have some great counting help this year, namely regulars Hal Wierenga and Lynn Davidson, Ralph Geuder, Mary Jane McMillan, Bill Hubick, Paul Fritz, Cal and Bud Orvis, Hugh Hoffman, Dan Haas, Greg Smith, Bob Rineer, John Hoffman, Andy Smith, Steve Small, Carol Kwiklinski, Dan Stewart, Linda Baker, Ed Carlson, Dan Walker, Jackie Cooper, Peg Kemp, Harry and Liz Armistead, and Andy and Judy Higgs. Many other visitors also enhanced the count. Again, the counters were fortunate and grateful to have the excellent cooperation of the staff at Fort Smallwood Park.

So there you have it, a season about average by the total number of raptors tallied, but quite special when you peruse all the details. Spring 2015 is guaranteed to make its own special mark. Come be a part of it!

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# 2013 Maryland Fall Count

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The annual Maryland Fall Count is held on the third weekend in September with the choice of Saturday or Sunday at the discretion of the county chapter and/or compiler. In 2013, eleven of Maryland's 23 counties submitted results. Eight counties counted on 21 September, two on 22 September, and one counted the prior weekend on 14 September (Table 1). Participation in the Fall Count is routinely significantly less than the annual May Count. Receiving results from eleven counties is typical, but for several counties it has been a long held tradition, with this year being the 23rd count for Allegany, 20th for Howard, and 18th for Dorchester.

With counts held on multiple days, more variation in weather conditions could be expected; however this year the weather was similar for all counts. Most counties reported increasing clouds during the day, and light to moderate rain beginning in mid- to late-afternoon. Temperatures were generally mild, ranging from the mid 50s °F to the high 70s °F.

A total of 188 field observers in 136 parties turned up 190 species and 69,991 individual birds. They spent a total of 426.2 hours and covered 296.6 miles on foot and spent 48.8 hours stationary. Birders spent 186.9 hours and 1815.7 miles birding by car. One observer covered 8 miles in 3 hours by bicycle. Nine observers in 6 parties reported spending 4.8 hours owling. Feeder watchers spent 27.5 hours (Table 2).

The following highlights were noted. A write-in single American White Pelican was observed in Dorchester. Bald Eagle sightings were high with a total of 266 (148 in Dorchester). Forster Tern numbers totaled 789 in 6 counties (Dorchester: 492, Calvert: 262). Merlin (total 15) was observed in 8 counties with a new high of 8 in Dorchester. The disparity in reports for Eastern Phoebe (total 244 found in all 11 counties) were unusual (even accounting for coverage differences) with a high of 74 found in Howard, a very low 2 observed in Dorchester, and none at the hawk watch in Cecil (Table 3).

In addition to the American White Pelican, other species with only a single individual found statewide included Lesser Scaup (Dorchester), Little Blue Heron (Dorchester), Baird's Sandpiper (Prince George's), White-rumped Sandpiper (Prince George's), American Woodcock (Caroline), Lesser Black-

backed Gull (Dorchester), Black-billed Cuckoo (Howard), Barn Owl (Prince George's), Common Nighthawk (Dorchester), Brown Creeper (Howard), Gray-cheeked Thrush (Allegany), and American Pipit (Howard) (Table 3). A tentative report of Yellow Rail in Dorchester was subsequently not accepted by the Maryland/DC Records Committee.

I want to offer my thanks to all the participants and compilers. The 2014 Fall Count report will appear in the Fall 2015 issue of *Maryland Birdlife*. I look forward to the count in 2015 (19 or 20 September) and hope that additional counties will participate and submit results.

**Table 1: 2013 Maryland Fall Count: participating counties, county codes, survey dates, and compilers.**

| County | Code | Survey Date | Compiler |
|---|---|---|---|
| Allegany | AL | 14 September 2013 | Chuck Hager |
| Washington | WA | 21 September 2013 | Doris Berger |
| Carroll | CA | 21 September 2013 | Don Jewell |
| Howard | HO | 21 September 2013 | Mike McClure, Chuck Stirrat |
| Baltimore | BA | 21 September 2013 | Joel Martin |
| Cecil (Hawk watch) | CE | 21 September 2013 | John Taylor |
| Prince George's | PG | 22 September 2013 | Dave Mozurkewich |
| Anne Arundel | AA | 21 September 2013 | David Gillum |
| Calvert | CT | 22 September 2013 | Sherman Suter |
| Caroline | CN | 21 September 2013 | Debby Bennett |
| Dorchester | DO | 21 September 2013 | Harry Armistead |

**Table 2. 2013 Maryland Fall Count: summary.**

| | AL | WA | CA | HO | BA | CE | PG | AA | CT | CN | DO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Species | 87 | 68 | 97 | 129 | 108 | 31 | 130 | 56 | 124 | 112 | 148 | 190 |
| Total Birds | 3428 | 2589 | 7345 | 13,130 | 3002 | 288 | 14,067 | 363 | 4537 | 8006 | 13,236 | 69,991 |
| Start Time | | | 6:30 | 5:50 | | 7:00 | | 7:15 | 6:05 | 5:00 | 5:00 | |
| Stop Time | | | 19:00 | 19:15 | | 13:30 | | 12:00 | 19:00 | 20:00 | 20:00 | |
| Parties | 5 | 5 | 9 | 35 | 21 | 1 | 29 | 3 | 10 | 9 | 9 | 136 |
| Individual People | 7 | 7 | 19 | 58 | 24 | 1 | 19 | 4 | 15 | 13 | 21 | 188 |
| Hours Driving | 6.5 | 25 | 26.7 | 25.6 | 6.5 | | 10 | | 3.1 | 22.5 | 61 | 186.9 |
| Miles Driving | 52 | 251.5 | 276.5 | 346.6 | 20 | | 109 | | 23.1 | 217 | 520 | 1815.7 |
| Hours Walking | 12 | 3.8 | 32 | 159.3 | 30.8 | 2.5 | 74 | 8 | 33.8 | 34 | 36 | 426.2 |
| Miles Walking | 6.5 | 2.5 | 27.5 | 114.6 | 28.6 | 3.6 | 54 | 4 | 27.3 | 11.5 | 16.5 | 296.6 |
| Stationary Hours | | | 7.3 | 11.2 | 9.9 | 4 | 8 | | 6.4 | 2 | | 48.8 |
| Feeder Hours | | 3 | 9.5 | 2.5 | | | 7.5 | 3 | | 2 | | 27.5 |
| Hours Owling: | | | | 0.7 | | | 1.4 | | 1.20 | 1.5 | | 4.8 |
| Miles Owling: | | | | 2.3 | | | 0.4 | | | 20 | | 22.7 |
| Hours on Bicycle | 3 | | | | | | | | | | | 3.0 |
| Miles on Bicycle | 8 | | | | | | | | | | | 8.0 |
| Total Hours | | | | | | | | | | | | 697.2 |
| Total Miles | | | | | | | | | | | | 2143.0 |

## Table 3. 2013 Maryland Fall Count: observed species.

| Species | AL | WA | CA | HO | BA | CE | PG | AA | CT | CN | DO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Canada Goose | 22 | 177 | 558 | 898 | 266 | | 801 | | 51 | 487 | 732 | 3992 |
| Mute Swan | | | | | | | | | 3 | | | 3 |
| Wood Duck | 25 | 3 | 8 | 21 | 3 | | 103 | | 1 | 31 | 101 | 296 |
| American Black Duck | | | | 1 | 6 | | | | | 5 | 56 | 68 |
| Mallard | 45 | 48 | 93 | 181 | 245 | | 207 | 3 | 57 | 40 | 496 | 1415 |
| Blue-winged Teal | | | | | | | 17 | | | | 8 | 25 |
| Northern Shoveler | | | | | | | 6 | | | | 3 | 9 |
| Northern Pintail | | | | | | | | | | 6 | | 6 |
| Green-winged Teal | | | | | 13 | | 47 | | | | 95 | 155 |
| Lesser Scaup | | | | | | | | | | | 1 | 1 |
| Ruddy Duck | | | | | | | | | | | 12 | 12 |
| Northern Bobwhite | | | | | | | | | | 5 | | 5 |
| Wild Turkey | 31 | 24 | | 5 | | | | | 1 | 42 | 33 | 136 |
| Common Loon | | | | | 1 | | | | | | 3 | 4 |
| Pied-billed Grebe | | | | 1 | | | 2 | | | 1 | 1 | 5 |
| Double-crested Cormorant | | | 4 | 8 | 239 | | 27 | 5 | 163 | 13 | 248 | 707 |
| American White Pelican | | | | | | | | | | | 1 | 1 |
| Brown Pelican | | | | | | | | | | | 20 | 20 |
| Great Blue Heron | 1 | 14 | 13 | 33 | 20 | | 27 | 3 | 24 | 14 | 62 | 211 |
| Great Egret | | | | 5 | 21 | | 4 | 1 | 4 | 2 | 72 | 109 |
| Snowy Egret | | | | | | | | | 15 | 1 | 40 | 56 |
| Little Blue Heron | | | | | | | | | | | 1 | 1 |
| Tricolored Heron | | | | | | | | | | | 6 | 6 |
| Green Heron | | 1 | 5 | 19 | 2 | | 7 | | 1 | | | 35 |
| Black-crowned Night-Heron | | | | 1 | 7 | | 2 | | | | 4 | 14 |
| Glossy Ibis | | | | | | | | | | 3 | | 3 |
| Black Vulture | 2 | 12 | 41 | 153 | 11 | 1 | 119 | 3 | 30 | 48 | 36 | 456 |
| Turkey Vulture | 47 | 90 | 106 | 275 | 19 | 16 | 83 | 8 | 65 | 223 | 280 | 1212 |
| Osprey | | | 2 | 6 | 5 | | 7 | | 16 | 2 | 7 | 45 |
| Bald Eagle | | 1 | 3 | 8 | 5 | 13 | 25 | | 51 | 12 | 148 | 266 |
| Northern Harrier | | | | | | | 2 | | | 1 | 8 | 11 |
| Sharp-shinned Hawk | 3 | 2 | 10 | 3 | 2 | 26 | 3 | | 3 | 1 | 4 | 57 |
| Cooper's Hawk | 2 | 3 | 6 | 15 | 4 | 4 | 8 | 1 | | 4 | 3 | 50 |
| Red-shouldered Hawk | 3 | 2 | 9 | 56 | 9 | | 29 | 2 | 5 | 3 | 3 | 121 |
| Broad-winged Hawk | 18 | | 6 | 1 | 1 | 2 | 177 | | 1 | | 1 | 207 |
| Red-tailed Hawk | 1 | 3 | 9 | 18 | 2 | | 12 | | 13 | 13 | 10 | 81 |
| Clapper Rail | | | | | | | | | | | 27 | 27 |
| Virginia Rail | | | | | | | 2 | | 2 | | 24 | 28 |
| Sora | | | | | | | 10 | 5 | 1 | | 1 | 17 |
| Common Gallinule | | | | | | | | | | | 3 | 3 |
| Semipalmated Plover | | | | | | | 2 | | | | 13 | 15 |
| Killdeer | 34 | 3 | 33 | 60 | 9 | | 85 | | 1 | 31 | 75 | 331 |
| Spotted Sandpiper | | | | 1 | 8 | | 2 | | | 7 | 2 | 20 |
| Solitary Sandpiper | | | | 3 | 2 | | | | | | 6 | 11 |
| Greater Yellowlegs | | | 2 | 2 | | | 17 | | | 40 | 29 | 90 |
| Willet | | | | | | | | | | | 2 | 2 |
| Lesser Yellowlegs | | | 6 | 6 | | | 16 | | | 26 | 27 | 81 |
| yellowlegs sp. | | | | | | | | | | | 2 | 2 |
| Sanderling | | | | | | | 3 | | | | 20 | 23 |
| Baird's Sandpiper | | | | | | | 1 | | | | | 1 |

| Species | AL | WA | CA | HO | BA | CE | PG | AA | CT | CN | DO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Least Sandpiper | | | 10 | 17 | 3 | | 29 | | | | 32 | 91 |
| White-rumped Sandpiper | | | | | | | 1 | | | | | 1 |
| Pectoral Sandpiper | | | | 4 | 4 | | 13 | | | | 13 | 34 |
| Semipalmated Sandpiper | | | | | 10 | | 13 | | | 6 | 60 | 89 |
| Western Sandpiper | | | | | | | | | | | 3 | 3 |
| peep sp. | | | | | | | | | | | 11 | 11 |
| Short-billed Dowitcher | | | | | | | | | | | 2 | 2 |
| Wilson's Snipe | | | | | | | 10 | | 2 | 3 | | 15 |
| American Woodcock | | | | | | | | | | 1 | | 1 |
| Laughing Gull | | | | | 363 | | 702 | 1 | 196 | 618 | 1777 | 3657 |
| Ring-billed Gull | | | | | 180 | | 71 | 1 | 141 | 222 | 65 | 680 |
| Herring Gull | | | | | 76 | | | | 147 | 4 | 151 | 378 |
| Lesser Black-backed Gull | | | | | | | | | | | 1 | 1 |
| Great Black-backed Gull | | | | | 10 | | | | 263 | | 79 | 352 |
| Caspian Tern | | | | 2 | 14 | | 3 | | 3 | | 11 | 33 |
| Common Tern | | | | | 1 | | | | 17 | | | 18 |
| Forster's Tern | | | | | 14 | | 12 | 1 | 262 | 8 | 492 | 789 |
| Royal Tern | | | | | | | | | 74 | | 105 | 179 |
| Rock Pigeon | 145 | 59 | 118 | 308 | 100 | | 309 | | 2 | 107 | 9 | 1157 |
| Mourning Dove | 101 | 39 | 212 | 390 | 47 | | 588 | 49 | 97 | 124 | 190 | 1837 |
| Yellow-billed Cuckoo | | | 1 | 5 | 2 | | 11 | | 4 | 1 | 4 | 28 |
| Black-billed Cuckoo | | | | 1 | | | | | | | | 1 |
| Barn Owl | | | | | | | 1 | | | | | 1 |
| Eastern Screech-Owl | 3 | 2 | 1 | 1 | | | 2 | | 2 | 3 | 17 | 31 |
| Great Horned Owl | 1 | | 1 | 1 | | | 2 | | 1 | 8 | 18 | 32 |
| Barred Owl | | 1 | 2 | 4 | | | 3 | | 4 | 11 | 7 | 32 |
| Common Nighthawk | | | | | | | | | | | 1 | 1 |
| Chimney Swift | 10 | 34 | 14 | 154 | 54 | 9 | 59 | 4 | 24 | 110 | 27 | 499 |
| Ruby-throated Hummingbird | 25 | 6 | 23 | 21 | 4 | | 17 | 1 | 9 | 19 | 14 | 139 |
| Belted Kingfisher | 2 | 9 | 11 | 38 | 4 | | 13 | | 13 | 7 | 15 | 112 |
| Red-headed Woodpecker | | | 5 | 2 | | | 1 | 1 | 5 | | 4 | 18 |
| Red-bellied Woodpecker | 41 | 29 | 64 | 210 | 15 | 3 | 99 | 15 | 77 | 46 | 26 | 625 |
| Yellow-bellied Sapsucker | | | | | | | 1 | | 1 | 2 | | 4 |
| Downy Woodpecker | 20 | 8 | 46 | 122 | 26 | 2 | 59 | 8 | 68 | 30 | 41 | 430 |
| Hairy Woodpecker | 13 | 1 | 10 | 27 | 6 | | 8 | 1 | 12 | 3 | 19 | 100 |
| Northern Flicker | 14 | 7 | 30 | 117 | 15 | 33 | 56 | 3 | 19 | 41 | 51 | 386 |
| Pileated Woodpecker | 14 | 12 | 12 | 52 | 3 | 2 | 19 | | 16 | 20 | 20 | 170 |
| American Kestrel | 3 | 9 | 14 | 10 | | 2 | 9 | | 3 | 7 | 29 | 86 |
| Merlin | | 1 | | 2 | | 2 | | | 1 | 1 | 8 | 15 |
| Peregrine Falcon | | | | | 2 | | 2 | | | | | 4 |
| Eastern Wood-Pewee | 3 | 5 | 9 | 43 | 8 | 2 | 16 | 3 | 34 | 5 | 15 | 143 |
| Yellow-bellied Flycatcher | | | | | | | 2 | | | | | 2 |
| Acadian Flycatcher | | | | 8 | | | 8 | | 8 | | 1 | 25 |
| Least Flycatcher | | | | | 2 | | 2 | | 1 | | 1 | 6 |
| *Empidonax* sp. | | | 3 | 14 | 3 | | 9 | | 1 | 1 | 9 | 40 |
| Eastern Phoebe | 23 | 12 | 29 | 74 | 7 | | 60 | 6 | 21 | 10 | 2 | 244 |
| Great Crested Flycatcher | 3 | 1 | 2 | 6 | 1 | | 2 | | 2 | | 4 | 21 |
| Eastern Kingbird | | 1 | | 1 | | | | | 1 | 1 | 4 | 8 |
| White-eyed Vireo | 1 | | 8 | 8 | 1 | | 21 | 2 | 15 | 1 | 13 | 70 |
| Yellow-throated Vireo | 3 | | | 3 | | | 2 | | 5 | | 1 | 14 |
| Blue-headed Vireo | 1 | | | | | | 1 | | 1 | | | 3 |
| Warbling Vireo | 3 | | | 2 | 4 | | | | | | | 9 |
| Philadelphia Vireo | | | | 2 | 2 | | | | 1 | | | 5 |

| Species | AL | WA | CA | HO | BA | CE | PG | AA | CT | CN | DO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Red-eyed Vireo | 14 | | 22 | 25 | 9 | 2 | 39 | 2 | 57 | 5 | 10 | 185 |
| Blue Jay | 140 | 87 | 294 | 823 | 49 | 86 | 298 | 28 | 192 | 137 | 162 | 2296 |
| American Crow | 108 | 245 | 522 | 748 | 35 | 22 | 184 | 5 | 177 | 336 | 248 | 2630 |
| Fish Crow | | 1 | 5 | 80 | 9 | | 63 | 6 | 7 | 149 | 32 | 352 |
| crow sp. | | | | 286 | 51 | | 32 | | | 103 | 20 | 492 |
| Common Raven | 8 | 4 | | | | | 3 | | | | | 15 |
| Horned Lark | | | | 12 | | | | | | 93 | 89 | 194 |
| Tree Swallow | | 207 | 4 | 4 | | 3 | | 1 | | 1025 | 791 | 2035 |
| N. Rough-winged Swallow | | 20 | | | 1 | | 2 | 7 | 1 | | 1 | 32 |
| Barn Swallow | | | | 13 | 4 | | 6 | | | | 26 | 49 |
| Carolina Chickadee | | 28 | 141 | 366 | 49 | 3 | 141 | 9 | 254 | 124 | 170 | 1285 |
| Black-capped Chickadee | 26 | 12 | | | | | | | | | | 38 |
| Tufted Titmouse | 61 | 43 | 132 | 228 | 23 | 4 | 130 | 10 | 186 | 72 | 95 | 984 |
| Red-breasted Nuthatch | 1 | | 2 | | | | | | | | | 3 |
| White-breasted Nuthatch | 34 | 16 | 45 | 117 | 6 | | 38 | 3 | 37 | 7 | | 303 |
| Brown-headed Nuthatch | | | | | | | | | 6 | | 61 | 67 |
| Brown Creeper | | | | 1 | | | | | | | | 1 |
| House Wren | 6 | | 14 | 39 | 10 | | 7 | 2 | 14 | | 19 | 111 |
| Winter Wren | 1 | | | | | | | | 2 | | | 3 |
| Marsh Wren | | | | 2 | | | | | 1 | | 8 | 11 |
| Carolina Wren | 47 | 37 | 134 | 445 | 53 | 1 | 206 | 16 | 149 | 104 | 97 | 1289 |
| Blue-gray Gnatcatcher | | | 4 | 8 | 3 | | 6 | | 2 | | 23 | 46 |
| Golden-crowned Kinglet | 9 | 1 | | 1 | | | | | | | | 11 |
| Ruby-crowned Kinglet | | | 4 | 1 | | | 3 | | 6 | | 1 | 15 |
| Eastern Bluebird | 16 | 53 | 147 | 301 | 10 | | 143 | 11 | 137 | 91 | 114 | 1023 |
| Veery | 1 | | 2 | 2 | | | | | 2 | | 3 | 10 |
| Gray-cheeked Thrush | 1 | | | | | | | | | | | 1 |
| Swainson's Thrush | 12 | | 1 | | 2 | | 2 | | 5 | | 3 | 25 |
| Hermit Thrush | | | | | | | | | 2 | 2 | | 4 |
| Wood Thrush | 5 | | 1 | 13 | 6 | | 4 | | 9 | 1 | 1 | 40 |
| American Robin | 41 | 31 | 168 | 570 | 59 | | 272 | 4 | 27 | 70 | 136 | 1378 |
| Gray Catbird | 30 | 13 | 165 | 410 | 67 | 3 | 158 | 23 | 24 | 7 | 30 | 930 |
| Brown Thrasher | 4 | | 2 | 15 | 8 | | 23 | 2 | 21 | 7 | 11 | 93 |
| Northern Mockingbird | 1 | 17 | 63 | 128 | 19 | 1 | 98 | 15 | 37 | 71 | 49 | 499 |
| European Starling | 1387 | 686 | 2930 | 2062 | 177 | | 2645 | 10 | 450 | 1476 | 1084 | 12,907 |
| American Pipit | | | | 1 | | | | | | | | 1 |
| Cedar Waxwing | 240 | 39 | 92 | 58 | 11 | 23 | 206 | | 7 | 26 | 47 | 749 |
| Ovenbird | 1 | | 3 | 1 | 4 | | | 1 | | 3 | 3 | 16 |
| Worm-eating Warbler | | | | 1 | | | 1 | | 1 | | 1 | 4 |
| Northern Waterthrush | | | | 1 | | | 3 | | 2 | | 1 | 7 |
| Black-and-white Warbler | 2 | 3 | 4 | 30 | 8 | | 7 | 5 | 14 | 10 | 29 | 112 |
| Tennessee Warbler | 3 | | 1 | 12 | 3 | | 4 | | | 1 | | 24 |
| Nashville Warbler | 1 | 3 | | 1 | 3 | | 3 | | 1 | | | 12 |
| Kentucky Warbler | | | 1 | 1 | | | | | | | | 2 |
| Common Yellowthroat | 4 | 3 | 30 | 90 | 29 | 1 | 31 | 3 | 38 | 10 | 36 | 275 |
| Hooded Warbler | 5 | | | | | | | | | | | 5 |
| American Redstart | 4 | 3 | 13 | 33 | 14 | | 27 | 2 | 9 | 16 | 36 | 157 |
| Cape May Warbler | | | 1 | 9 | | | 2 | | 5 | 3 | 1 | 21 |
| Northern Parula | | | 2 | 9 | 4 | | 7 | 1 | 9 | 10 | 17 | 59 |
| Magnolia Warbler | 2 | 4 | 18 | 69 | 41 | 2 | 27 | 1 | 8 | 6 | 19 | 197 |
| Bay-breasted Warbler | 4 | | | 4 | 1 | | 2 | | 1 | 2 | 1 | 15 |
| Blackburnian Warbler | | | | 3 | 1 | | 2 | | 2 | 4 | 4 | 16 |
| Yellow Warbler | | | 1 | 1 | 2 | | | | 3 | | 2 | 9 |

| Species | AL | WA | CA | HO | BA | CE | PG | AA | CT | CN | DO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Chestnut-sided Warbler | 3 | 2 | | 13 | 8 | | 7 | | 2 | 1 | 5 | 41 |
| Blackpoll Warbler | 6 | | 1 | 1 | 1 | | 2 | | 1 | | | 12 |
| Black-throated Blue Warbler | 1 | | 8 | 17 | 1 | | | | 3 | 3 | 2 | 35 |
| Palm Warbler | | | 1 | 13 | 4 | | 6 | | 2 | 3 | 7 | 36 |
| Pine Warbler | 3 | | 2 | 1 | 2 | | 12 | 1 | 14 | 7 | 86 | 128 |
| Yellow-rumped Warbler | 3 | | 6 | 1 | | | 1 | | 6 | 8 | | 25 |
| Yellow-throated Warbler | | | | 1 | | | | | 1 | | 1 | 3 |
| Prairie Warbler | 1 | | | 2 | 1 | | | | 2 | | 3 | 9 |
| Black-throated Green Warbler | 12 | 10 | 23 | 38 | 3 | | 7 | | 4 | | | 97 |
| Canada Warbler | 1 | | | 1 | | | 2 | | | | | 4 |
| Wilson's Warbler | 2 | 1 | | | | | 2 | | | | | 5 |
| Yellow-breasted Chat | | | | | | | 1 | | 1 | | 1 | 3 |
| warbler sp. | 5 | | | 27 | 1 | | 3 | | 3 | | | 39 |
| Eastern Towhee | 31 | 6 | 15 | 59 | 7 | | 21 | 7 | 14 | 3 | 4 | 167 |
| Chipping Sparrow | 60 | 63 | 105 | 221 | 33 | | 83 | 4 | 56 | 121 | 60 | 806 |
| Field Sparrow | 5 | | 10 | 27 | 1 | | 5 | | 3 | 4 | 3 | 58 |
| Savannah Sparrow | | | | 9 | 1 | | | | | 1 | 3 | 14 |
| Grasshopper Sparrow | | | | 2 | | | | | 1 | | | 3 |
| Seaside Sparrow | | | | | | | | | | | 20 | 20 |
| Song Sparrow | 16 | 2 | 29 | 92 | 9 | | 13 | | 3 | 7 | 2 | 173 |
| Swamp Sparrow | | | 7 | | 1 | | 1 | | | | | 9 |
| White-throated Sparrow | | | | 2 | | | | | | | | 2 |
| sparrow sp. | | | | | | | | | 2 | | | 2 |
| Summer Tanager | | | | | | | | | 2 | 1 | 8 | 11 |
| Scarlet Tanager | 5 | 5 | 3 | 13 | 3 | | 8 | | 5 | 2 | 4 | 48 |
| Northern Cardinal | 42 | 45 | 168 | 522 | 64 | 5 | 182 | 12 | 186 | 107 | 98 | 1431 |
| Rose-breasted Grosbeak | 6 | | 3 | 6 | 1 | | 5 | | | | | 21 |
| Blue Grosbeak | | | 1 | 16 | 2 | | 3 | | 1 | 44 | 35 | 102 |
| Indigo Bunting | 3 | | 8 | 67 | 10 | 1 | 49 | 1 | 29 | 48 | 30 | 246 |
| Bobolink | | | 1 | 80 | 16 | | 5 | | 19 | 144 | 341 | 606 |
| Red-winged Blackbird | | | 3 | 39 | 77 | 7 | 2877 | 25 | 104 | 40 | 1111 | 4283 |
| Eastern Meadowlark | | 2 | 2 | 17 | | | | | 2 | 3 | | 26 |
| Common Grackle | 1 | 2 | 185 | 416 | 4 | | 740 | 1 | 3 | | 1228 | 2580 |
| Boat-tailed Grackle | | | | | | | | | | 68 | 4 | 72 |
| Brown-headed Cowbird | | 40 | 3 | 301 | | | 824 | | 12 | 559 | 462 | 2201 |
| blackbird sp. | | | | | | | | | | 115 | | 115 |
| Baltimore Oriole | | | | 4 | | | | | | | 2 | 6 |
| House Finch | 5 | 23 | 64 | 99 | 46 | | 50 | 8 | 26 | 19 | 3 | 343 |
| Purple Finch | 1 | | 1 | 1 | | | | | | | | 3 |
| American Goldfinch | 79 | 167 | 108 | 245 | 28 | 7 | 84 | 9 | 42 | 36 | 48 | 853 |
| House Sparrow | 255 | 46 | 81 | 319 | 25 | | 160 | 1 | 22 | 210 | 106 | 1225 |

*[Editor's Note: If your county does not conduct an annual Maryland Fall Count, please consider starting one. Contact Chuck Stirrat at ChuckS20@verizon.net for additional information.]*

## *MARYLAND BIRDLIFE*

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Contributors should prepare manuscripts according to the following instructions.

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**Illustrations:** Photographs or high-definition images may be accepted if necessary or desired by the author(s) to support the text. Photographs should be submitted in color. Figure numbers, as cited in the text, and figure legends should be keyed to each respective photograph.

***Maryland Birdlife*** is published twice annually to record and encourage the study of birds in and around Maryland. ***Maryland Birdlife*** contains original articles, notes, and research papers primarily pertaining to Maryland and the Mid-Atlantic region. Potential topics may include geographic or temporal distribution, ecology, biology, morphology, systematics, behavior, migration, life history, as well as other biological topics. Annual bird counts also will be published. All submissions are subject to editorial review and acceptance. Articles and research papers will be peer-reviewed. Send submissions to the Editor: Eugene J. Scarpulla, 14207 Lakerun Court, Bowie, MD 20720-4861, ejscarp@comcast.net.

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**CONTENTS – SPRING 2015**

Editor's Note, Acknowledgments, and Dedication
*Eugene J. Scarpulla* ..... 1
Chandler S. Robbins: Maryland's Birding Treasure
*Donald H. Messersmith* ..... 2
Effects of Sea Level Rise on Foraging Habitat of the Piping Plover (*Charadrius melodus*): A Geographic Information Systems Approach
*Peter L. Lostritto and George E. Taylor, Jr.* ..... 23
Fish Crows (*Corvus ossifragus*) Utilize Unusual Nesting Location and Habitat
*Jan G. Reese* ..... 42
Fish Crows (*Corvus ossifragus*) Prey on Eggs of Virginia Rail (*Rallus limicola*) and Common Tern (*Sterna hirundo*)
*Jan G. Reese, Peter C. McGowan, Lorie W. Staver, and Carl R. Callahan* ..... 51
Correcting the Record: Boat-tailed Grackle (*Quiscalus major*) Breeding in Kent County, Maryland
*David Bridge* ..... 58
2013 Spring Raptor Migration at Fort Smallwood Park, Anne Arundel County, Maryland
*Sue A. Ricciardi* ..... 61
2014 Spring Raptor Migration at Fort Smallwood Park, Anne Arundel County, Maryland
*Sue A. Ricciardi* ..... 64
2013 Maryland Fall Count
*Charles R. Stirrat* ..... 67

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# MARYLAND BIRDLIFE

*Bird studies in the Mid-Atlantic region*

*Bulletin of the Maryland Ornithological Society, Inc.*

**FALL 2015**
**VOLUME 64**
**NUMBER 2**

# MARYLAND ORNITHOLOGICAL SOCIETY, INC.

P.O. Box 105, Monrovia, MD 21770-0105
http://www.mdbirds.org

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**Cover: Maryland's first Couch's Kingbird, *Tyrannus couchii.*** Near a pond on Mason Road NE, Allegany County, Maryland, 11 November 2014. (Photographed by Dave Czaplak)

*Maryland Birdlife* 64(2):1

# EDITOR'S NOTE

This is my second issue as Editor of *Maryland Birdlife*. Associate Editor Mark Johnson and I have been very pleased with the responses we have received from members of the Maryland Ornithological Society (MOS). We thank all of the members that have complimented the journal and our efforts. We thank the peer reviewers that have helped to maintain the quality of the articles. Several members have stepped forward and submitted articles for publication. A steady stream of submittals is what's needed for the viability of the journal. Mark and I invite you to send draft manuscripts to us. (Please see the author guidelines on the inside back cover.) If you have never written or published before, don't feel intimidated, Mark and I will assist you in the process.

**Calling All Bird Artists!**

Occasionally, a bird article will have a large amount of white space at the end of its last page. Rather that leaving the space blank, *Maryland Birdlife* is considering printing examples of members' bird art. Our thought is to add an illustration of a species related to its preceding article. All illustrations would be printed in black-and-white. If you might be interested in participating in this endeavor, please contact me.

**Maryland Mid-Winter Count Compiler Needed**

Currently, there is no compiler for the Maryland Midwinter Count. If you would be interested in volunteering in this capacity, please contact me and I will put you in contact with the Seasonal Counts Coordinator.

Mark and I hope that you enjoy the "Fall 2015" issue of *Maryland Birdlife*. We have already begun working on the "Spring 2016" issue. We look forward to seeing your name in print as either an author of a forthcoming article or an artist showing your personal artwork. Your participation will keep *Maryland Birdlife* alive and well in the future.

Eugene J. Scarpulla
Editor
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*Maryland Birdlife* 64(2):2-6

# First Record of Couch's Kingbird, *Tyrannus couchii*, in Maryland

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On 11 November 2014, while birding in Allegany County, we serendipitously found a Couch's Kingbird, *Tyrannus couchii*, west of Rocky Gap State Park, at a pond on Mason Road NE. This bird continued in the area for another two weeks and was seen, heard, and photographed by dozens of birders.

After spending much of the morning birding in other parts of Allegany County, we headed to Mason Road pond, arriving at 11:35 a.m. We had not even stopped the car before we observed a large *Myiarchus*-looking flycatcher atop one of the tall deciduous trees bordering the pond. We both scrambled to exit the car with our binoculars, scope, and a camera, and we observed the bird in astonishment for about 10 minutes. We discussed what we were seeing: a *Tyrannus* with a large gray head, darker mask, pale throat, and bright yellow coloring from under tail to breast. We noted the bird's forked tail, the lack of white outer webs to the outer tail feathers, and that its back appeared in the bright light to be grayish with maybe some green coloration. From our perspective, the bill looked quite large. The bird was very active, patrolling from treetop to treetop between deciduous and evergreen trees. Unfortunately, it did not vocalize.

The bird was still in view when we finally consulted our field guides. We had with us the Sibley (2000) and the National Geographic Society (Dunn et al. 2002) field guides. We first ruled out the most likely vagrant kingbird to occur in Maryland, the Western Kingbird (*Tyrannus verticalis*). The tail of Western Kingbird has white outer webs on the feathers and lacks a fork, in contrast to the bird in question. In addition, the upper breast was not gray on the bird under direct observation. Cassin's Kingbird (*Tyrannus vociferans*) also was ruled out because of the size of the bill (in a Cassin's the bill would have appeared relatively small) and the absence of a dark gray hood and breast. We were left with Couch's and Tropical (*Tyrannus melancholicus*) Kingbirds. We discussed the size and length of the bill; at the time we believed the bill to be large enough to identify the bird as a Tropical Kingbird. Furthermore, Tropical Kingbird is more prone to vagrancy, with many historical sightings in coastal states. We emailed, phoned, and texted other birders with the preliminary Tropical Kingbird identification. We watched the bird another 10 minutes or so, but then it flew out of sight.

Shortly afterward, Mikey Lutmerding, Tom Feild, and J.B. Churchill arrived on the scene, and after a few hours they relocated the bird. This time the bird did vocalize a single sharp "kip" call, and Mikey Lutmerding (2014) was able to record the bird's call notes, and this recording, along with these observers' view that the bird's bill was not large enough to be a Tropical Kingbird, determined that this was actually a Couch's Kingbird.

A photograph of the bird (Figure 1) was texted by Dave Czaplak to Tony Leukering (freelance ornithologist, Largo, Florida) who forwarded it to Peter Pyle (Staff Biologist, Institute for Bird Populations, Point Reyes Station, California). Pyle's analysis (2014) of the spread primary feathers stated that it appeared P5 would be shorter than P10 on the unspread wing, another feature of Couch's Kingbird, which is in the opposite configuration on Tropical Kingbird (Pyle 1997). Pyle also felt that the overall wing shape and bill size looked better for Couch's Kingbird and he aged it as a first-fall bird, sex unknown but possibly a male based on the shape of the juvenile outer primary. This photograph (Figure 2), as well as additional ones taken by Czaplak (2014), Joel Martin, and others, showed that a distinct step would exist between primaries P5 and P6 on the unspread wing, another characteristic of Couch's Kingbird (Traylor 1979). In subsequent days, additional photographs and observations became public, providing further confirmation of the identification of Couch's Kingbird.

Couch's Kingbird is accidental in the United States outside of southern Texas and the Gulf Coast (Dunn et al. 2002). Pete Dunne (2006) classifies it as a "2" on a scale of 0 (no vagrancy) to 4 (widespread) in his Vagrancy Index. A "2" is a species that shows "some modest pattern of vagrancy." The Allegany County bird is the first record of Couch's Kingbird in Maryland. It was seen consistently in the area where it was found from 11 November through 24 November 2014 and was accepted by the Maryland/District of Columbia Records Committee (MD/DCRC) and placed on the Official List of the Birds of Maryland in March 2015 (MD/DCRC 2015).

The Maryland Couch's Kingbird is only the third verified occurrence of this species east of the Mississippi River and outside the Gulf region (eBird 2015). The first record of Couch's Kingbird outside its typical range, in the broad region north and east of Texas (north of the Gulf Coast and east of the Mississippi), was a one-day wonder on Plum Island in Essex County, Massachusetts on 7 September 2001. This sighting was accepted by the Massachusetts Record Committee in 2002 (Rines 2002).

The second record occurred in Michigan with a bird seen at Tawas Point State Park, Iosco County, from 26-28 May 2007. This bird was accepted by the Michigan Bird Records Committee in 2009 (Putnam 2010).

**Figure 1: Couch's Kingbird.** Giving the appearance that P5 would be shorter than P10 on the unspread primaries (white line extending from P10 through P6). Allegany County, Maryland, 11 November 2014. (Photographed by Dave Czaplak)

**Figure 2: Couch's Kingbird.** Giving the appearance that a distinct step (white bracket) would exist between P5 and P6 on the unspread primaries. Allegany County, Maryland, 11 November 2014. (Photographed by Dave Czaplak)

Additionally, there was a "thought to be" Couch's Kingbird on Cape Sable Island, Nova Scotia, Canada, on 16 October 1997, but details were minimal (Mactavish 1998). In *All the Birds of Nova Scotia*, McLaren (2012) stated that several observers studied this bird on the late afternoon of 15 October and the early morning of 16 October. A distant, out-of focus photograph and descriptions of the bird's appearance suggested Couch's Kingbird. Two observers who heard its calls concluded that they matched Couch's rather than Tropical Kingbird. In the introduction to his book, McLaren "makes it clear that such records are included only because they are plausible, not to 'certify' them, in the belief that other reviewers can make up their own minds from such published evidence" (McLaren, in litt., 23 September 2015).

While Tropical Kingbird has over 10 records in the same region, there are several birds that could not be conclusively identified beyond Tropical/Couch's Kingbird. It is possible that some of these refer to Couch's Kingbird (Mlodinow 1998, eBird 2015).

Addendum: About a month after the Couch's Kingbird had stopped being seen in Maryland, a Couch's Kingbird was reported and continued to be seen in the area of West Village, Manhattan, New York, New York, between 25 December 2014 and 9 January 2015 (eBird 2015).

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# Maryland's First Live Photo-documented Chestnut-collared Longspur, *Calcarius ornatus*

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On 31 January 2015, we were slowly driving through the snow-covered farm fields of Washington County when we observed a small brown bird on the side of Chewsville Road. Our first impression suggested a Lapland Longspur (*Calcarius lapponicus*), but the bird's face appeared buffy and the auricular pattern less distinct than that species. The bird was feeding along the snowless area next to the road and in a strip of longer grass. Traffic was fairly heavy and every few minutes a car would drive by and the bird would flush, fly around, and eventually return to the roadside. It often gave a rattle call as it flushed. We viewed the bird with binoculars from about 30 to 50 m (~100 to 160 ft), and were able to obtain some photos and video. We watched the bird from about 1:00 p.m. until 1:30 p.m., until it was flushed by a passing car, flew up over a hill, and did not return.

Our photos showed blackish feathering around the breast, very short primary projection, no rufous in the wings, and extensive white in the tail, field marks of a male Chestnut-collared Longspur (*Calcarius ornatus*) in basic plumage. We sent out some poor snaps off the back of Feild's camera which allowed Matt Hafner and several others to confirm the identification. We then posted information of the sighting to the Maryland & DC Birding listserv (Feild 2015, Green 2015). We returned several more times during the day but were unable to relocate the bird.

On 1 February, about 20 people arrived early hoping the bird would return. The first sighting of note was a Rough-legged Hawk (*Buteo lagopus*) that spent the day in the area. At about 8:30 a.m., the Chestnut-collared Longspur was refound several hundred meters from its previous location. It remained in this general area, in a small grassy patch near several fence posts, where it provided good views to many observers until at least 4:10 p.m. (Figures 1 and 2). It was also reported by one observer on 2 February, just after 9:00 a.m. There were many photographs taken during the three-day sighting that provided additional documentation of the bird (eBird 2015, Maryland Biodiversity Project 2015).

**Figure 1. Chestnut-collared Longspur.** Male, basic plumage. Chewsville Road, Washington County, Maryland, 1 February 2015. (Photographed by Clive Harris)

**Figure 2. Chestnut-collared Longspur.** Male, basic plumage. Chewsville Road, Washington County, Maryland, 1 February 2015. (Photographed by Jared Fisher)

There are 42 reports of the Chewsville Road bird on eBird for 1 February, plus one report for 2 February, the last report of which we are aware (eBird 2015). It is likely that as the snow melted, the bird simply moved away from the road. 31 January was a cold day with the temperature remaining below freezing and little snow melt. Away from the road the ground was almost completely snow-covered. 1 and 2 February were warmer and sunny, with temperatures as high as ~7 °C (~44.6 °F), and large areas of ground were soon snow free. This created an abundance of habitat for a very small brown bird.

The 2015 Washington County sighting was accepted by the Maryland/District of Columbia Records Committee (MD/DCRC) (Phil Davis, in litt., 27 August 2015).

## PREVIOUS MARYLAND RECORD AND REPORT

There are two previous reports of Chestnut-collared Longspur in Maryland.

There is an accepted record of an adult male specimen that was collected by Captain Annsley Ludlam "on the Thoroughfare farm just beyond the drawbridge across Assateague Bay" at Ocean City, Worcester County, on 20 August 1906 (Kirkwood 1908, MD/DCRC 2015b). The specimen is housed in the Division of Birds, Department of Vertebrate Zoology, National Museum of Natural History, Smithsonian Institution, Washington, DC.

There was also a sighting by Harold Wierenga at Sandy Point State Park, Anne Arundel County, on 30 October 1970. The bird was subsequently observed on 31 October by Harold Wierenga, Chan and Eleanor Robbins, Carl Carlson, Paul DuMont, Arthur Alexander, and Bill and Fran Pope (Wierenga 1970). This record was not accepted by the MD/DCRC. The decision summary states: "Some reviewers felt that the written description was not detailed enough, especially regarding colors and patterns of the head, upperparts, and tail plumage. The addition of the field notes taken at the time was appreciated, but proved insufficient to overcome the reviewers' doubts. Chan Robbins has been unable to locate his field notes for this sighting; if they come to light the record can be reconsidered." (MD/DCRC 2015a).

## NORTHEAST AND ATLANTIC COAST RECORDS

Table 1 summarizes the various state records committee-accepted records of Chestnut-collared Longspurs in the Northeast and Atlantic Coast states. There are 26 accepted records for this region, with records from 10 of the 17 constituent states. The first is from 1886, and the most recent prior record from June 2012. Since 1968, there have been records, on average, every 2.5 years. The records are fairly evenly spread throughout the year, with records in every

month except July. There are 6 records from June, more than in any other month. The majority of the records are from coastal locations, so the Washington County record is noteworthy in that it was roughly 250 km (155 mi) from the coast.

**Table 1. State bird records committee-accepted records of Chestnut-collared Longspur for the Northeast and Atlantic Coast states (listed north to south).**

| State | Date | Location | Citation |
|---|---|---|---|
| Maine | 13 AUG 1886 | Scarborough, Cumberland Co. | MBRC 2015 |
| Maine | 22-28 JUN 2012 | Biddeford, York Co. | MBRC 2015 |
| Vermont | (no records) | (no records) | VBRC 2014 |
| New Hampshire | 29 NOV 1992 | Deering, Hillsborough Co. | NHRBC 2010 |
| Massachusetts | 23-27 OCT 1991 | Duxbury Beach, Duxbury, Plymouth Co. | MARC 2015 |
| Massachusetts | 15DEC 2004 | Plum Island, Essex Co. | MARC 2015 |
| Rhode Island | (no records) | (no records) | RIARC 2015 |
| Connecticut | 29 AUG 1968 | Sikorsky Airport, Stratford, Fairfield Co. | ARCC 2015 |
| Connecticut | 7 JUN 1994 | Stratford, Fairfield Co. | ARCC 2015 |
| Connecticut | 10 JUN 2000 | Haddam-Killingworth HS, Haddam, Middlesex Co. | ARCC 2015 |
| New York | 16 FEB 1889 | Long Island City, Long Island, Queens, New York | NYSARC 2015; Bull 1964 |
| New York | 14 SEP 1891 | Miller Place, Long Island, Suffolk Co. | NYSARC 2015; Bull 1964 |
| New York | 21-27 APR 1923 | Orient, Long Island, Suffolk Co. | NYSARC 2015; Bull 1964 |
| New York | 29 APR 1944 | Dyker Beach, Long Island, Brooklyn, New York | NYSARC 2015; Bull 1964 |
| New York | 5 NOV 1968 | near Rhinecliff, Dutchess Co. | NYSARC 2015 |
| New York | 6-8 JUN 1982 | Bay County Park, East Rockaway, Nassau Co. | NYSARC 2015 |
| New York | 5 JAN 2001 | Jones Beach State Park, Nassau Co. | NYSARC 2015 |
| New York | 18-20 FEB 2001 | Jones Beach State Park, Nassau Co. | NYSARC 2015 |
| Pennsylvania | (no records) | (no records) | PORC 2015 |
| New Jersey | 18 JUN 1980 | Cape May, Cape May Co. | NJBRC 2015 |
| New Jersey | 14 JAN - mid FEB 1984 | Sandy Hook, Monmouth Co. | NJBRC 2015 |
| Maryland/DC | 20 AUG 1906 | Ocean City, Worcester Co. | MD/DCRC 2015b |
| Maryland/DC | 31 JAN - 2 FEB 2015 | Chewsville Road, Washington Co. | Phil Davis, in litt. |
| Delaware | (no records) | (no records) | DBRC 2013 |
| West Virginia | (no records) | (no records) | WVBRC 2015 |
| Virginia | 5 JUN 1977 | Chincoteague, Accomack Co. | VARCOM 2014; Wendy Ealding, in litt. |
| North Carolina | late FEB - early MAR 1992 | Charlotte Motor Speedway, near Harrisburg, Cabarrus Co. | CBCBRC 2014 |
| North Carolina | mid- MAY 2001 | SE corner of Great Smoky Mountains National Park, Haywood Co. | CBCBRC 2014 |
| North Carolina | 23 APR - 2 MAY 2011 | Fort Fisher, New Hanover Co. | CBCBRC 2014 |
| South Carolina | (no records) | (no records) | CBCBRC 2014 |
| Georgia | (no records) | (no records) | GCRC 2014 |
| Florida | 24 NOV 1983 | Pa Hay Okee, Everglades National Park, Dade Co. | FOSRC 2013 |
| Florida | 31 OCT 1999 | Ft. Pickens, Escambia Co. | FOSRC 2013 |

There were no other reported Northeast or East Coast sightings of Chestnut-collared Longspur during 2014 or through July 2015 (eBird 2015).

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# Rare Occurrences of Ground-nesting in the Northern Flicker, *Colaptes auratus*

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**Abstract:** Northern Flickers (*Colaptes auratus*), cavity-nesting woodpeckers, typically excavate holes in tree trunks for nests but there are rare, documented reports of this species nesting directly on the ground. Here, we report a new record of a flicker incubating seven eggs directly on the ground in a saucer-like depression in a freshly tilled garden; the nest subsequently failed. Details on 16 additional ground-nests are summarized, and we briefly discuss possible causes of the behavior such as lack of suitable nest trees in a previously used territory, and/or recent eviction from a nearby cavity by another species during the egg-laying period.

**Keywords:** *Colaptes auratus*, ground-nesting, nest competition, nest site, Northern Flicker

Northern Flickers (*Colaptes auratus*) are generalist habitat users associated with a wide range of habitats including various types of forests, savannahs, parkland, orchards, cactus deserts, residential areas, and agricultural lands where they usually excavate nest cavities in trees (Bent 1939, Wiebe and Moore 2008). Nests are excavated in both live and dead standing wood with entrances typically located greater than 0.4 m [1.3 ft] above the ground (Raphael and White 1984, Wiebe 2001). The reuse of existing nest cavities is also common (Wiebe et al. 2007).

Although nests excavated in trees or poles are by far the most common, other types of substrates have been noted at wooden buildings among exterior wall cornices, siding, and insulating materials (Bent 1939, Dennis 1969, Reese, pers. obs.). Other nesting cavities have been reported as excavated into an old haystack and target butt at a shooting range, in a crevice of an old brick chimney, and in the hub of an old prairie wagon wheel sitting upright in weeds (Bent 1939). Open water seems no deterrent as nests have been found behind a hole in a bridge bulkhead, in a piling cavity beneath a pier (Bent 1939), and in an old piling offshore in tidewater where the cavity was appropriated by starlings in subsequent years (Reese 1977).

Nearly all species of woodpeckers nest in trees of forested regions of the world; however, three species have adapted to open unforested habitats for feeding and nesting. In South America there are two woodpecker species within the genus *Colaptes* that have adapted to unforested grasslands, savannahs, campo (grassland plain) and puna (high treeless plateau) habitats where nests may be found among crevices of rocky ledges or cliff faces, banks along streams or relief-cuts for terrestrial transportation routes, or in termite mounds (Short 1982). These elevated nest sites are seldom prone to flooding. In Africa, the monotypic Ground Woodpecker (*Geocolaptes olivaceus*) is restricted to similar unforested regions with cliff and bank type habitats used for nest sites (Short 1982). Northern Flickers occasionally use non-tree cavity nest sites, but it is rare. In areas lacking trees, Northern Flickers have been reported excavating cavities into vertical earthen banks within deep-cut riverine systems, steep canyon walls (Bent 1939) and/or relief-cuts for transportation routes (Gabrielson and Jewett 1940). Others have been reported using abandoned Belted Kingfisher (*Megaceryle alcyon*) or Bank Swallow (*Riparia riparia*) burrows (Bent 1939), or hollows among the roots of toppled trees or soil extending several centimeters below the ground surface (Dennis 1969).

Studies suggest reproductive success is higher for Northern Flickers that nest in tree or pole cavities (Dennis 1969, Wiebe 2003, Fisher and Wiebe 2006b), thus it is unclear why sometimes presumably suboptimal sites are chosen. Here, we report the rare incidence of a flicker nesting on the ground and summarize other ground-nesting Northern Flicker occurrences reported in the literature.

## OBSERVATION

We received a report from two local birders, D. Terry Allen and Leslie A. Roslund, who had identified a Northern Flicker incubating eggs on the ground in Easton, Talbot County, Maryland (latitude 38.780253°, longitude -76.052869°). The nest site, located in a suburban residential area, was near the center of a recently tilled vegetable garden, about 800 $m^2$ (~8611 $ft^2$) comprised of sandy loam soil and situated within an area of mowed lawn over 1 ha (2.5 ac) in size. Both observers visited the garden on several occasions to photograph a clutch of seven eggs on barren soil on 18 May 2006 (Figure 1) and a male flicker incubating in the ground-nest on 21 May 2006 (Figure 2). However, the nest was found deserted with only three eggs on 2 June and empty on 10 June. The shallow, saucer-shaped nest scrape measured 41 cm (16 in) in diameter with the center 8.9 cm (3.5 in) deep. According to the landowner, when the two flickers were disturbed, the presumed mates, would vocalized with each other from the garden and/or nearby landscape trees. When the incubating bird was flushed from the garden it would return quickly to the eggs after the disturbance passed. A quick survey revealed that none of the trees within a 1 km (0.6 mi) radius of the site appeared large enough to accommodate a flicker nest cavity.

**Figure 1. Northern Flicker ground-nest with eggs.** Easton, Talbot County, Maryland. Photographed by D. Terry Allen, 18 May 2006.

**Figure 2. Male Northern Flicker incubating eggs in the ground-nest.** Easton, Talbot County, Maryland. Photographed by Leslie A. Roslund, 21 May 2006.

## DISCUSSION

A search of the literature revealed reports of an additional 16 ground-nesting flickers; all 17 records are summarized in Table 1. Flickers in 76% (13) of the incidences chose barren ground comprised of easily pliable substrates with 41% (7) located in association with standing utility poles, 24% (4) with residential gardens, 24% (4) with cotton fields, and 18% (3) with lawn grass (Table 1: Nest Location).

Descriptions for 16 nests (Table 1: Excavation) report 56% (9) as saucer-like depressions in the soil surface with three ranging 18-54 cm (7-21 in) wide and 7.6-9.5 cm (3-4 in) deep. Perpendicular excavations into the substrate characterized 31% (5) of the 16 nests with three ranging 17-25 cm (7-10 in) wide and 20-41 cm (8-16 in) deep. Eggs in the remaining two nests (13%) were simply deposited directly on soil or mowed lawn. Egg numbers in or lying near 16 individual nests ranged 2-9 (56% with 5-7 eggs). Egg-laying intervals and/or clutch-sizes, however, are uncertain since 15 of the 16 nests failed and/or were abandoned and subject to one or only a few casual observations. Eggs hatched in only one of the nests, but the fate of the hatchlings was unknown (Dorsey 1969). Causes of nest failure at the other nests could not always be determined, but flooding from precipitation, disturbance by human activity, and predators or scavengers were often implicated.

It is unknown which sex chooses the nest location for the flicker pair (Wiebe and Moore 2008), but the use of a simple depression in the ground appears to be an ineffectual nesting strategy. Studies have reported the proportion of conventional nests in which eggs hatched range from 64% to 100% (73-100% [Dennis 1969]; 64% [Ingold 1998]; 69% [Wiebe et al. 2007]), but in this sample eggs hatched in only one (6%) of the 16 described ground nests (Table 1: Nest Fate) and it is unknown whether the young fledged (Dorsey 1969). The low hatching success in ground-nests is not surprising given the visually obvious solid-white egg color and lack of nest cover. Additionally, nest failure may be related to lack of an egg retainer area or the shallow nest bowls failing to contain the eggs well. Indeed, one incubating flicker was observed on a ground-nest with three scattered eggs, first incubating one egg then another (Dorsey 1974).

Locating a nest on the ground with the probability of poor reproductive success suggests such nests may be the result of extenuating circumstances where absence of nearby conventional sites result in ground use as a last resort. Pairs are usually monogamous, often returning to nest in the same home range each year (Dennis 1969, Wiebe and Moore 2008). The landowner in the current study reported that a large dead maple tree 40 m (131 ft) from the ground nest and potentially containing a flicker nest cavity had been removed during the previous winter. Thus, the flicker pair with attachment to a previously used

**TABLE 1. A chronological summary of Northern Flicker ground-nesting reports.** Failed nests include those where it was not known if the eggs had already been abandoned before a possible predator or scavenger event. ND = no data provided. *Substrate data was obtained from United States Department of Agriculture county soils maps for individual nest locations (NRCS 2013).

| State: Town | Dates | Nest Location | Substrate* | Excavation | Nest Fate | Reference |
|---|---|---|---|---|---|---|
| Massachusetts: West Yarmouth | 14-26 JUL 1906 | forest road | sand | saucer-like depression | abandoned | Brewster 1909 |
| New York: Fisher's Island | 9 JUN-16 JUL 1916 | bare ground in open area | sand | saucer-like depression | failed | Pearson 1916 |
| Pennsylvania: Easton | 21-28 JUN 1933 | bare ground | silt loam | saucer-like depression | failed | Paff 1934 |
| Massachusetts: Attleboro | Late MAY-9 JUN 1964 | electrical substation | gravel sandy loam | saucer-like depression | disturbance precipitation flooding | Kinsey 1966 |
| Virginia: Harrisonburg | 1964 | small vegetable garden | silty clay loam | on the ground | precipitation flooding | Murray 1965 |
| Georgia: Elberton | 19 JUN 1964 | cotton field | sandy loam | ND | ND | Hopkins 1964 |
| North Carolina: Raleigh | Early MAY-7 JUN 1965 | electrical substation | gravelly sandy loam | saucer-like depression | failed | Wray 1965 |
| Georgia: Dalton | 31 MAY-11 JUN 1965 | small sand pile in yard | gravelly sandy loam | saucer-like depression | failed | Hamilton 1965 |
| Georgia: Dalton | 10-20 JUN 1969 | at base of utility pole in grass at edge of hatchery pond | silty clay loam | 41 cm (16 in) deep cavity | failed precipitation flooding | Hamilton and Hart 1969 |
| Georgia: Palmetto | 23-24 JUN 1969 | residential lawn near garden | sandy loam | 28 cm (11 in) deep cavity | 3 hatchlings, but subsequent fate unknown | Dorsey 1969 |
| Georgia: Rome | 21-22 JUN 1971 | mowed athletic field | grass over silt loam | no excavation | grass mower | Dorsey 1974 |
| Iowa: Des Moines | 10-19 JUN 1972 | vegetable garden | silt loam | saucer-like depression | failed precipitation flooding | Brown 1972 |
| Mississippi: Hollandale | APR 1973 | near utility pole in cotton field | silt and sandy loam | 20 cm (8 in) deep cavity | failed precipitation flooding | Ganier and Jackson 1976 |
| Mississippi: Hollandale | APR 1974 | near utility pole in cotton field | silt and sandy loam | 20 cm (8 in) deep cavity | failed precipitation flooding | Ganier and Jackson 1976 |
| Mississippi: Hollandale | APR 1975 | near utility pole in cotton field | silt and sandy loam | 20 cm (8 in) deep cavity | failed precipitation flooding | Ganier and Jackson 1976 |
| South Carolina: Anderson | 8 MAY-23 JUN 1984 | at base of utility pole in residential yard | sandy loam | saucer-like depression | abandoned | Wagner and Miller 1986 |
| Maryland: Easton | 15-27 MAY 2006 | freshly tilled garden | sandy loam | saucer-like depression | failed disturbance | (this observation) |

territory and nest site may have been forced to nest on the ground because there were no other trees in the vicinity large enough for nest excavation. Similarly, only two of the other studies report any trees nearby the ground nest that might have been large enough for excavation (Hamilton and Hart 1969, Brown 1972), while two pairs insistently made a nearby second excavation and/or laid a second clutch after the first attempt was flooded (Hamilton and Hart 1969, Ganier and Jackson 1976).

Competition with European Starlings (*Sturnus vulgaris*) for nest sites has been described (Howell 1943, Dennis 1969, Ingold 1998, Wiebe 2003). Flickers usually re-nest in a different cavity when the first nesting attempt fails by eviction or depredation (Ingold 1998, Wiebe 2003, Fisher and Wiebe 2006a, Wiebe et al. 2007); however, a complete lack of alternative tree substrates may lead to ground nesting, especially if there is little time to find a new site. Town and residential areas are the indicated locations of approximately 60% (10) of the ground-nesting flicker reports, the same areas commonly frequented by starlings (Table 1: Nest Location).

The ground-nesting flicker reports span a century of chronological time with nests found in ten states ranging from Massachusetts to Georgia and west to Mississippi and Iowa (Table 1). Clearly these nesting attempts represent many presumably unrelated flicker pairs. Yet the similar ground-nesting behavior emerged despite disparities in the time, location and generations. This suggests an embedded trait in Northern Flickers, but whether it is inherited or learned independently is unknown.

Flickers forage on the ground more than other woodpeckers with a diet purported to consist of about 40% plant matter (mostly berries) and 60% animal matter, with ants alone comprising nearly half the total diet (Beal 1911). Flickers may be largely dependent upon insect matter during egg laying and brooding of young during April–June, seeking out areas with abundant ant populations since berries have not yet formed. Indeed, 76% (13) of the ground-nesting flickers chose barren substrates (Table 1: Nest Location), a habitat also commonly utilized by ant colonies. Soil grubs of common garden pests may also be an abundant food source in those freshly tilled habitats. In view of the flicker's high dependency on ants, fearless adaptability to ground-feeding, and frequency of time spent on the ground in pursuit of ants, may predispose them to ground nesting behavior despite the unforeseen risks in the strategy.

Factors common in this study and most of the 16 documented reports of ground-nesting flickers fail to indicate any clear explanation for the observed behavior. Current observations suggest that nesting on the surface or excavating perpendicular into the ground is not beneficial for Northern Flickers. Future observations of unusual nest substrates in the species should carefully assess the

nesting situation, particularly the presence of nesting alternatives to try to determine potential benefits for this behavior.

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# An Evaluation of Species Diversity and Age Structure during Fall Migration Mortality from Urban Structures in Baltimore, Maryland and Washington, District of Columbia

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**ABSTRACT:** Collision mortality of Neotropical migratory songbirds has long been associated with attraction and disorientation associated with artificial lighting, particularly in large metropolitan areas. Observation of avian injuries and mortalities caused from impact with windows during migration has been well documented. Age structure is also an important factor in assessing population resiliency. Older birds are typically more effective in producing young as they tend to arrive earlier, occupy higher quality territories, and produce greater clutch sizes than yearling (Hatching Year) birds. We used standardized banding procedures to determine the age and sex of 462 individuals of 51 species collected during the fall migration in Baltimore, Maryland and Washington, District of Columbia in 2010 and 2011. Collectors used a consistent route during a specific time interval to retrieve birds found in the downtown areas of both cities. Birds were frozen and subsequently aged and sexed, when possible, following the collection for each migration period. A chi-square test of homogeneity (goodness-of-fit) was performed to determine if the overall distribution of After Hatching Year (AHY) and Hatching Year (HY) birds was different than a 1:1 ratio. A chi-square test of independence (association) was performed to examine the relationships between age and location, sex, and year. Sex had the largest influence on age, where 62% of the birds sexed as unknown were more likely to be aged HY. Birds collected in Baltimore were more likely to be HY (59%) than those collected in DC (49%). The distribution of AHY (41%) to HY (59%) of birds killed in 2010 was different than a 1:1 ratio; however, in 2011 it was not. Year did not have an effect on the age distribution and did not differ more than 6%. Together, the mean proportions of AHY and HY birds were largely equivalent, whereas proportions of HY birds reported by local banding stations outside these metropolitan areas during this period were suggestive of higher proportions of HY birds, implying that the detrimental influence of impacts with buildings in metropolitan areas may have a much greater effect on populations than previously considered.

**Figure 1. Representative bird causalities collected from metropolitan District of Columbia in fall 2010.** (Photo courtesy of City Wildlife).

## INTRODUCTION

Avian mortality resulting from building and window collisions on nocturnal migrating Neotropical migrants is well documented (Figure 1) (Evans Ogden 1996, Klem 2009; but see Gauthreaux and Belser 2006 for a review). Songbirds have been reported to experience the greatest rates of mortality, particularly those that travel the greatest distances (Arnold and Zink 2011). Banks (1979) estimates that approximately 1.25 million birds are killed in North America each year due to collisions with television towers. Klem (1990) and Dunn (1993) estimate that mortality due to window collisions are between 100 million and one billion birds/year, and Loss et al. (2014) provided estimates that included low and high rise buildings with mortality estimates of 365-988 million birds annually (median = 599 million). These estimates are similar to those estimated from encounters with feral cats, wind turbines, and communication towers (Manville 2005, Klem 2010, Longcore et al. 2012, Loss et al. 2013). Despite these estimates, the relative influence of building-strikes resulting in mortality events contributing to population decreases compared to nest predation and collisions with radio towers, high wires, and other manmade objects has not been determined. Arnold and Zink (2011), however, used collision data from multiple sources and compared those records with trend data from the North American Breeding Bird Survey. They found only a weak positive correlation ($r = 0.154$) and suggested that species impacted by collisions with buildings were

likely to have population increases. Results were variable and relationships were weak.

Age-related increases in offspring production have also been documented for several species of birds (Saether 1990, Holmes et al. 1992, Martin 1995). Additionally, nest success and site fidelity have been correlated (Darley et al. 1977, Lozano and Lemon 1999). Birds in their second reproductive year or older tend to produce more offspring for a variety of reasons. Older birds tend to arrive at breeding sites earlier, have larger clutch sizes, and fledge more young than birds in their first reproductive year (Saether 1990, Martin 1995, Roth et al. 1996). Understanding the age-specific rates in mortality of migratory birds during building and window collisions is important in estimating long-term effects to populations.

Banders routinely age and determine sex for many species and publish these data as part of avian monitoring efforts. Some sources are the data compiled and published in *North American Bird-Bander* in the Atlantic Flyway Reviews (Robbins 2011, 2012). Here we report species diversity and age profiles of birds collected as part of urban avian mortality monitoring efforts and compare these relationships with data collected from local banding stations to infer on the relative importance of window and building collisions to the impact of these events on populations.

## METHODS

Birds resulting from building collisions in downtown Baltimore, Maryland, and Washington, District of Columbia (DC) were collected as part of a standardized monitoring effort during the falls of 2010 and 2011. Briefly, volunteers canvassed specific predetermined routes in the downtown areas of each city beginning in the predawn hours covering approximately 4 km (2.5 mi) from August through November. The Baltimore route included the nearby harbor area and the DC route was close to a green space mall area with water nearby. Birds that were alive were immediately transferred to wildlife rehabilitators for assistance; those killed were placed in plastic bags along with notes on location and time. In most cases, location included specific addresses and building identification. Birds were then frozen, collected at a single coordination site, assigned to a species, and aged and sexed by the authors using Pyle (1997). Martin (1964) was used to determine age and sex for American Woodcock (*Scolopax minor*). The extent of skull pneumatization could not be performed given the frozen condition of the carcasses. Only birds collected as part of canvassing this consistent route were evaluated.

A chi-square test of homogeneity (goodness-of-fit) was performed to determine if the overall distribution of After Hatching Year (AHY) versus Hatching Year

(HY) birds killed was significantly different. In other words, the test of homogeneity determined if there was a 1:1 ratio of AHY to HY birds killed. A chi-square test of independence (association) was performed to examine the relationship between age and location, sex, and year. Standardized residuals were also used to determine exactly where the largest, and in turn, most significant differences were located within each cross tabulation. Due to small sample sizes, After Second Year (ASY) and After Third Year (ATY) were combined with AHY to create one AHY category. All Unknown (U) ages were excluded.

## RESULTS

Over 607 birds were collected as part of this effort during the falls of 2010 and 2011. However, because of condition, age could only reliably be determined for 462 individuals representing 51 species. The top ten encountered species are presented in Table 1. Together, they constituted 74% of the total evaluated. Over 20 species of warblers (Parulidae) were collected. Five *Catharus* thrush species, as well as six American Woodcock, and four White-breasted Nuthatches (*Sitta carolinensis*) were of interest.

**Table 1. Top ten species collected during 2010 and 2011 fall migration collection events in downtown Baltimore and District of Columbia.**

| Common Name | Scientific Name | ALPHA code | % | N |
|---|---|---|---|---|
| White-throated Sparrow | *Zonotrichia albicollis* | WTSP | 30 | 103 |
| Common Yellowthroat | *Geothlypis trichas* | COYE | 20 | 69 |
| Gray Catbird | *Dumetella carolinensis* | GRCA | 11 | 37 |
| Ovenbird | *Seiurus aurocapilla* | OVEN | 10 | 35 |
| Swamp Sparrow | *Melospiza georgiana* | SWSP | 7 | 24 |
| Song Sparrow | *Melospiza melodia* | SOSP | 7 | 24 |
| Hermit Thrush | *Catharus guttatus* | HETH | 4 | 15 |
| Dark-eyed Junco | *Junco hyemalis* | SCJU | 4 | 13 |
| Wood Thrush | *Hylocichla mustelina* | WOTH | 3 | 12 |
| Yellow-bellied Sapsucker | *Sphyrapicus varius* | YBSA | 3 | 12 |

Sex of collected birds had the largest influence on age (Table 2). Those categorized as unknown for gender were significantly more likely to be HY age (62%), as opposed to AHY (38%) ($N = 462$, $df = 2$, $p < 0.001$). This was expected given that age cannot reliably be determined in many species of young HY birds (Pyle 1997). Due to the large number of birds of unknown sex (AHY [N = 108] and HY [N = 179]), few correlations could be made between sex and age.

**Table 2. Sex of collected birds versus age.** Results of the chi-square homogeneity (goodness-of-fit: a) and association (independence: b & c) of age and sex of birds collected during 2010 and 2011 fall migration surveys in downtown Baltimore and District of Columbia.

| | | Age | | |
|---|---|---|---|---|
| **Sex** | | **AHY** | **HY** | **Total** |
| **Female** | Count | 35 | 16 | 51 |
| | % within Sex | 68.6% | 31.4% | 100.0% |
| | Standardized Residual | 2.6 | -2.3 | |
| **Male** | Count | 63 | 61 | 124 |
| | % within Sex | 50.8% | 49.2% | 100.0% |
| | Standardized Residual | 1.0 | -0.9 | |
| **Unknown** | Count | 108 | 179 | 287 |
| | % within Sex | 37.6% | 62.4% | 100.0% |
| | Standardized Residual | -1.8 | 1.6 | |
| **Total** | Count | 206 | 256 | 462 |
| | % within Sex | 44.6% | 55.4% | 100.0% |

Collection location also influenced age to a small extent (Table 3). Those located in Baltimore were more likely to be HY (59%), as opposed to AHY (41%) when compared to those found in DC (HY [49%], AHY [51%]; $p < 0.030$).

**Table 3. Collection location versus age.** Results of the chi-square homogeneity (goodness-of-fit: a) and association (independence: b & c) of age and collection location of birds collected during 2010 and 2011 fall migration surveys in downtown Baltimore and District of Columbia.

| | | Age | | |
|---|---|---|---|---|
| **Location** | | **AHY** | **HY** | **Total** |
| **Baltimore** | Count | 119 | 173 | 292 |
| | % within Location | 40.8% | 59.2% | 100.0% |
| | Standardized Residual | -1.0 | 0.9 | |
| **DC** | Count | 87 | 83 | 170 |
| | % within Location | 51.2% | 48.8% | 100.0% |
| | Standardized Residual | 1.3 | -1.2 | |
| **Total** | Count | 206 | 256 | 462 |
| | % within Location | 44.6% | 55.4% | 100.0% |

The distribution of AHY (41%) to HY (59%) birds killed in 2010 was different than a 1:1 ratio (N = 202, df = 1, $p < 0.02$) (Table 4). However, in 2011, the difference (AHY [47%]; HY [53%]) was not different than a 1:1 ratio (N = 260, df = 1, $p = 0.39$). Collection year proved to not have a statistically significant effect on age distribution; however AHY and HY proportions did differ by approximately 6% between 2010 and 2011 ($p = 0.182$).

**Table 4. Collection year versus age.** Results of the chi-square homogeneity (goodness-of-fit: a) and association (independence: b & c) of age and collection year of birds collected during 2010 and 2011 fall migration surveys in downtown Baltimore and District of Columbia.

| | | Age | | |
|---|---|---|---|---|
| **Year** | | **AHY** | **HY** | **Total** |
| **2010** | Count | 83 | 119 | 202 |
| | % within Year | 41.1% | 58.9% | 100.0% |
| | Standardized Residual | -0.7 | 0.7 | |
| **2011** | Count | 123 | 137 | 260 |
| | % within Year | 47.3% | 52.7% | 100.0% |
| | Standardized Residual | 0.7 | -0.6 | |
| **Total** | Count | 206 | 256 | 462 |
| | % within Year | 44.6% | 55.4% | 100.0% |

## DISCUSSION

There are differences between species in their probability for collisions with urban buildings. Species with a relatively high incidence (termed "super colliders") were 25 to 57 times more likely than others to collide with a building (Arnold and Zink 2011). According to Arnold and Zink (2011), the five top species identified as colliders with buildings were Swamp Sparrow (*Melospiza georgiana*), Brown Creeper (*Certhia americana*), Black-throated Blue Warbler (*Setophaga caerulescens*), Nelson's Sparrow (*Ammodramus nelsoni*), and Fox Sparrow (*Passerella iliaca*). In the present study, the top five colliders were: White-throated Sparrow (*Zonotrichia albicollis*, N = 103), Common Yellowthroat (*Geothlypis trichas*, N = 69), Gray Catbird (*Dumetella carolinensis*, N = 37), Ovenbird (*Seiurus aurocapilla*, N = 35) with Swamp Sparrow (N = 24) and Song Sparrow (*Melospiza melodia*) (N = 24) tied at fifth. Interestingly, these species are typically within the top ten for many banding stations in the Mid-Atlantic Region during this time period (Robbins 2012). Some species, because of life history or physiological characteristics are at greater risk of fatality from building collisions. However, data from local banding stations suggest that flight frequency, timing, and group density of

some migratory species may also increase their probability of risk of collision mortality.

Greater mortality of naïve individuals (e.g., yearlings) has been suggested during long migratory events (Sherry and Holmes 1995). Older, experienced breeders have the greatest potential for reproductive success and therefore affect population growth rates (Saether 1990, McDonald and Caswell 1993, Martin 1995). The data collected from the present study found that proportions of AHY and HY birds collected post mortem from downtown Baltimore and the District of Columbia were not different, whereas during this period proportions of HY birds banded at nearby banding stations were largely higher, likely a result of offspring born that year (HY birds). This suggests that a significant proportion of birds killed from building collisions are experienced, post-breeding adults. In 2010, there was a slightly larger proportion of HY birds (59%) that were killed compared to AHY (41%); in 2011 the difference was not much different from a 50:50 distribution. These data are in marked difference from those collected at nearby banding locations where during this same period, the mean percentage of HYs was 84% in 2010 and 79% in 2011 (Robbins 2011, 2012). These included data from banding stations in the Maryland Piedmont (Eden Mill, Laurel, and Patuxent) and Coastal Plain (Foreman's Branch and Kiptopeke). The banding station with the highest percentage of HYs (i.e., Kiptopeke) was 92% and 95% in 2010 and 2011 (mean values for both years provided in Figure 2), respectively, approximately 40% higher in 2011 than the results from building collisions presented here. These results suggest that a greater proportion of older birds are striking buildings as a result of nocturnal collisions in metropolitan areas—birds most productive in producing offspring.

These comparisons, however, must be considered preliminary and are not without assumptions. Birds processed as part of banding operations are typically captured at low heights (up to 3 m [10 ft]), whereas migrating birds collected at ground level after impact with tall buildings may have collided at higher levels. Other investigators have reported that 90% of collisions occur in the first 12 m [39 ft] above ground level (Evans Ogden 1996; but also see Loss et al. 2014). Additionally, banders use skull pneumatization as a means for determining age; this was not feasible for the birds collected and stored frozen. Lighted buildings/structures have been suggested by many as an attractant (Evans Ogden 1996, Jones and Francis 2003, Manville 2005, Gauthreaux and Belser 2006). Banding stations often operate during daylight hours away from urban areas.

Although Arnold and Zink (2011) did not find a strong relationship between species found to be "super colliders" and population trends reported from data collected in the Breeding Bird Survey (BBS), there are several plausible explanations for this. As BBS routes are contingent upon observations proximal to roads, and that observers are constrained by aural and visual cues, these data

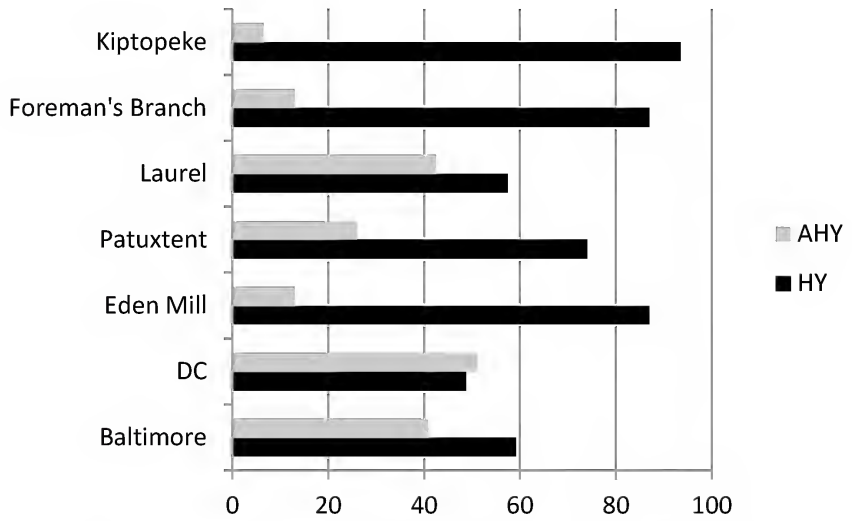


**Figure 2. Percentages of After Hatching Year (AHY) and Hatching Year (HY) birds.** Collected (Baltimore and DC) or banded (other banding stations) during fall migration from August through November in 2010 and 2011 in the Maryland/Virginia Piedmont (Eden Mill, Laurel, and Patuxent) and Coastal Plain (Foreman's Branch and Kiptopeke) (Robbins 2012). Mean values were used to represent data for both years.

can be variable and may not consider trends in some species where either proximity to roads or variation due to observer error is considerable. In the case of building collisions at night, these data may represent the attractiveness of the threat where observations include individuals that were actually handled and measured. Additionally, their evaluation is correlational at best, and does not provide data that could make a cause and effect determination (Shaub et al. 2011); other shortcomings were also suggested (Klem et al. 2012). Regardless, the magnitude of the difference in the proportions of first-year and older birds from collision mortality and those from regional banding stations are considerable, suggesting a greater importance of this threat to populations than previously considered.

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# 2015 Spring Raptor Migration at Fort Smallwood Park, Anne Arundel County, Maryland

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For the second year in a row, the debut of the migration season was delayed by inclement weather, and arrival dates for most raptors were later than usual. In fact, arrival dates for Black Vulture, Sharp-shinned Hawk, Red-tailed Hawk, and American Kestrel were the latest, or tied for the latest, ever recorded in the 22-year span from 1993 to 2014. Despite the late start, 10,954 raptors were counted for the season, approximately 600 above the 10-year (2005-2014) average (Table 1). The number of days of coverage was 86, close to average, but the 464 hours of coverage were about 25 below average. The number of Bald Eagles tallied was a record 196, twenty-eight more than the previous record in 2013. Vulture numbers were substantially above their 10-year averages, as were numbers of Red-shouldered Hawks, Mississippi Kites, and American Kestrels. However, numbers of Ospreys, Northern Harriers, Sharp-shinned, Cooper's and Broad-winged Hawks, and Merlins were all notably below average.

February: The season officially began on 23 February during a period of snow, very cold weather and ice on the river. The first migrants, 5 Turkey Vultures, weren't observed until 25 February and unbelievably, that was the total for the month: five raptors during five days and ten hours of coverage, all well below average.

March: Moreover, that total stood until 7 March, when the migration finally seemed to get "its wings" and subsequently produced the best March since 2009, with 5200 raptors counted, a 38% increase over the 10-year average. Fourteen of the 22 days of coverage in March resulted in triple-digit or better counts. The "or better" refers to 21 March when 1221 raptors were recorded, including 1043 Turkey Vultures and 52 Red-shouldered Hawks.

April: The counts were about 550 below average, marked by a fizzle of the usual third-week bonanza. Accipiter numbers have now been anemic in April for four straight seasons. But, there was a big day of 1039 raptors counted on 11 April, with Northern Harriers (32), Sharp-shinned Hawks (123), Broad-winged Hawks (401), and American Kestrels (187) leading the way.

**Table 1. 2015 Monthly and Seasonal Count Summaries, Five-year Count Averages (2010-2014), and Ten-year Count Averages (2005-2014).** (Due to the rounding off of the individual five-year and ten-year species averages, they do not necessarily add up to the total five-year and ten-year averages.)

| Survey Days and Hours | Feb 2015 | Mar 2015 | Apr 2015 | May 2015 | Jun 2015 | Total 2015 | Five-year Average (2010-2014) | Ten-year Average (2005-2014) |
|---|---|---|---|---|---|---|---|---|
| Survey Days | 5 | 22 | 26 | 29 | 4 | 86 | 89 | 88 |
| Survey Hours | 10.25 | 118.00 | 146.25 | 174.25 | 15.75 | 464.50 | 507 | 489 |
| **Species** | | | | | | | | |
| Black Vulture | 0 | 341 | 174 | 21 | 0 | 536 | 429 | 372 |
| Turkey Vulture | 5 | 4114 | 1925 | 682 | 10 | 6736 | 5446 | 5452 |
| Osprey | 0 | 113 | 239 | 56 | 0 | 408 | 436 | 459 |
| Swallow-tailed Kite | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 |
| Mississippi Kite | 0 | 0 | 0 | 13 | 1 | 14 | 10 | 7 |
| Bald Eagle | 0 | 24 | 52 | 114 | 6 | 196 | 141 | 113 |
| Northern Harrier | 0 | 9 | 57 | 9 | 0 | 75 | 79 | 99 |
| Sharp-shinned Hawk | 0 | 122 | 837 | 164 | 0 | 1123 | 1608 | 1810 |
| Cooper's Hawk | 0 | 95 | 140 | 39 | 0 | 274 | 377 | 430 |
| Northern Goshawk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Red-Shouldered Hawk | 0 | 218 | 63 | 3 | 0 | 284 | 202 | 191 |
| Broad-winged Hawk | 0 | 0 | 528 | 117 | 1 | 646 | 528 | 730 |
| Swainson's Hawk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Red-tailed Hawk | 0 | 107 | 98 | 32 | 0 | 237 | 234 | 263 |
| Rough-legged Hawk | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Golden Eagle | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| American Kestrel | 0 | 54 | 312 | 4 | 0 | 370 | 263 | 320 |
| Merlin | 0 | 2 | 26 | 9 | 0 | 37 | 57 | 57 |
| Peregrine Falcon | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 |
| Unidentified Accipiter | 0 | 0 | 1 | 0 | 0 | 1 | 12 | 14 |
| Unidentified Buteo | 0 | 1 | 8 | 1 | 0 | 10 | 8 | 10 |
| Unidentified Eagle | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 |
| Unidentified Falcon | 0 | 0 | 2 | 1 | 0 | 3 | 3 | 4 |
| Unidentified Raptor | 0 | 0 | 2 | 1 | 0 | 3 | 15 | 18 |
| Other | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Total** | **5** | **5200** | **4464** | **1267** | **18** | **10,954** | **9853** | **10,355** |

May: The month was just a bit below average and featured 114 Bald Eagles, all but one of the 14 Mississippi Kites (Figure 1), and a notable rarity on 5 May — Swallow-tailed Kite. The Swallow-tailed Kite sighting was the seventh for the Park, but of greater import was that it was seen simultaneously with a Mississippi Kite, an unprecedented event.

June: A heat wave shortened June's coverage to just four days, and numbers were weak as a result, totaling just 18 raptors.

**Figure 1. Mississippi Kite, *Ictinia mississippiensis*.** Fort Smallwood Park, Anne Arundel County, Maryland, 30 May 2015. (Photographed by Dan Walker)

**Figure 2. Sandhill Crane, *Grus canadensis*.** Fort Smallwood Park, Anne Arundel County, Maryland, 25 May 2015. (Photographed by Dan Walker)

Other notable raptor sightings included an Osprey pair, nesting just outside the Park boundaries, whose nest-tree branch came down in a storm. The nest likely held eggs; luckily, it was rebuilt nearby soon afterward. With so many Bald Eagles around, sightings of multiple individuals at the same time were common, and synchronized aerial maneuvers and bouts of talon-grappling delighted observers on several occasions. Then there was the Sharp-shinned Hawk that came zooming up the path and passed startled observers at chair-level height.

Besides raptors, observers witnessed the migration of more than 4000 Canada Geese between 16 and 18 March, 1500 Canvasbacks on 13 March, 2 Little Gulls on 11 April, and a brief appearance of a Brown-headed Nuthatch on 10 May, the second record for the Park. Finally, there were two sightings of Sandhill Cranes, 2 on 15 May and 1 on 25 May (Figure 2). No new bird species were added to the cumulative Park list this season, but last year's report failed to mention a new species, Wilson's Phalarope on 4 May 2014. The Park total now stands at 264 species.

Special thanks to Hal Wierenga and Lynn Davidson, who found in storage some raptor data from the early years. We now have some numbers for 1988, which were altogether missing, and additions to several other years. The results are reflected in their revised Season Totals records.

The compiler, Sue Ricciardi, was greatly aided by a terrific crew of observers: Hal Wierenga and Lynn Davidson, Ralph and Jane Geuder, Mary Jane McMillan, Bill Hubick, Bob Rineer, Paul Fritz, Cal Orvis, Hugh Hoffman, Dan Haas, Greg Smith, Dan Walker, John Hoffman, Andy Smith, Steve Small, Carol Cwiklinski, Dan Stewart, Dave Mozurkewich, Steve Whitcomb, Dan Eberly, Dave Grove, Gene Wagner, Linda Baker, Harry and Liz Armistead, and Andy and Judy Higgs. Many other visitors also enhanced the count. The staff at Fort Smallwood Park extended their usual much-appreciated cooperation over the course of the season.

No doubt about it, the Spring 2015 raptor migration was memorable, complete with the thrills, surprises, mysteries, and unpredictable flights that keep observers wanting to come back for more. Luckily, 2016 is waiting to oblige.

*[Fort Smallwood Park is located in northeastern Anne Arundel County at 9500 Fort Smallwood Road, Pasadena, Maryland. It is situated at the tip of a peninsula where the Patapsco River and Rock Creek meet the Chesapeake Bay. The park is operated by the Anne Arundel County Department of Recreation and Parks. Additional Fort Smallwood Park information can be found at: http://www.aacounty.org/RecParks/parks/ftsmallwood/index.cfm.]*

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# 2014 Maryland May Count

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The annual May Count was held on Saturday, 10 May 2014. Results were submitted from 19 of Maryland's 23 counties (Table 1), five more than submitted results for the 2013 May Count.

Weather statewide on 10 May was unsettled, with most compilers reporting significant cloudiness through much of the day. Light showers were widespread but at least one strong thunderstorm was recorded. Temperatures were generally mild, with lows in the 50s and 60s °F and highs ranging from the 70s to about 80 °F.

**Table 1. 2014 Maryland May Count: participating counties, county codes, and compilers**.

| County | Code | Compiler |
|---|---|---|
| Garrett | GA | Connie Skipper |
| Allegany | AL | J.B. Churchill |
| Frederick | FR | Michael Welch |
| Montgomery | MO | Diane Ford |
| Carroll | CA | Don Jewell |
| Howard | HO | Kevin Heffernan |
| Prince George's | PG | Fred Fallon |
| Anne Arundel | AA | Dotty Mumford |
| Charles | CH | George Jett |
| Calvert | CT | Sherman Suter |
| St. Mary's | SM | Patty Craig |
| Harford | HA | Deb Mosley |
| Cecil | CE | Richard Donham |
| Talbot | TA | Les Coble |
| Dorchester | DO | Harry Armistead |
| Caroline | CN | Debby Bennett |
| Wicomico | WI | Ellen Lawler |
| Worcester | WO | Marcia Balestri |
| Somerset | SO | Paul Bystrak |

A total of 290 counters in 197 parties turned up 238 species and 114,004 individual birds (Table 2). Among the most unusual sightings reported were: a lingering Snow Goose and two Common Goldeneyes in Worcester; three Mississippi Kites at the Fort Smallwood Park hawk watch in Anne Arundel; two White-rumped Sandpipers in Dorchester; three Black Terns in Harford; an Olive-sided Flycatcher in Montgomery; a Yellow-bellied Flycatcher in Charles; an early Alder Flycatcher in Garrett; a Swainson's Warbler in Calvert (this report is under review by the Maryland records committee); a Mourning Warbler in Harford; and two lingering Rusty Blackbirds, one in Howard and one in Prince George's (Table 3).

**Table 2. 2014 Maryland May Count: summary.**

| | GA | AL | FR | MO | CA | HO | PG | AA | CH | CT | SM | HA | CE | TA | DO | CN | WI | SO | WO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parties | | | 10 | 5 | 9 | 61 | 19 | 21 | 8 | 7 | 7 | 8 | 3 | 6 | 9 | 12 | 8 | 1 | 3 | 197 |
| Observers | 42 | 8 | 19 | 5 | 14 | 39 | 30 | 28 | 8 | 11 | 14 | 12 | 8 | 7 | 13 | 14 | 12 | 2 | 4 | 290 |
| Start Time | 0400 | | 0445 | | | 0500 | 0530 | 0600 | 0500 | 0500 | 0500 | 0600 | 0445 | | | 0500 | 0450 | 0515 | 0615 | |
| Stop Time | 2130 | | 1900 | | | 2040 | 2030 | 1800 | 1100 | 2045 | 1500 | 1900 | 1200 | 1850 | | 2200 | 1915 | 1915 | 2020 | |
| Driving | | | | | | | | | | | | | | | | | | | | |
| hours | 49 | | 50 | | 17 | 37 | 20 | 12 | 26 | 3 | 34 | | | 4 | 39 | 26 | 16 | 4 | 12 | 349 |
| miles | 428 | | 476 | | 301 | 358 | 223 | 86 | 203 | 17 | 360 | | | 105 | 574 | 360 | 120 | 25 | 130 | 3766 |
| Walking | | | | | | | | | | | | | | | | | | | | |
| hours | 82 | | 36 | 10 | 47 | 196 | 106 | 59 | 28 | 41 | 18 | | | 16 | 71 | 35 | 9 | 6 | 8 | 768 |
| miles | 62 | | 22 | 14 | 32 | 135 | 84 | 41 | 18 | 28 | 13 | | 13 | 4 | 17 | 13 | 10 | 7 | 4 | 517 |
| Owling | | | | | | | | | | | | | | | | | | | | |
| hours | 1 | | 2.3 | | | 0.2 | 2.6 | | 2 | | 6.5 | | 3 | 2 | 9 | 2 | 0.5 | | 0.6 | 32 |
| Stationary | | | | | | | | | | | | | | | | | | | | |
| hours | 42 | | 5 | 1 | 3 | 4 | 6 | 10 | | 5 | | 2 | | | | 13 | 11 | 4 | | 106 |
| Other | tractor | | | | | | | var. | | | | | | | boat | | | | | |
| hours | 1 | | | | | | | 13 | | | | | | | 2 | | | | | 16 |
| miles | 19 | | | | | | | 11 | | | | | | | 1 | | | | | 31 |
| Total Species | 149 | 113 | 138 | 103 | 125 | 145 | 161 | 144 | 121 | 137 | 140 | 150 | 107 | 112 | 171 | 136 | 105 | 84 | 113 | 238 |
| Total Birds | 6660 | 2431 | 11375 | 1721 | 5905 | 14784 | 6952 | 8199 | 5338 | 4411 | 6645 | 6018 | 1004 | 1817 | 15704 | 7829 | 2630 | 915 | 3666 | 114004 |

Despite the concerted efforts of the counters, a few expected species escaped detection. These include Yellow-crowned Night-Heron, Golden-crowned Kinglet, Henslow's Sparrow, and Pine Siskin (163 in 2013). Only one Red-breasted Nuthatch was reported in contrast to 22 found in 2013.

Many thanks to all of the participants and compilers. I look forward to future May Counts and hope for 100% participation by Maryland's counties. As I tell the Frederick Bird Club, it is the best day of the year to be out counting birds!

## Table 3. 2014 Maryland May Count: observed species.

| | GA | AL | FR | MO | CA | HO | PG | AA | CH | CT | SM | HA | CE | TA | DO | CN | WI | SO | WO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Snow Goose | | | | | | | | | | | | | | | | | | | 1 | 1 |
| Canada Goose | 151 | 20 | 385 | 92 | 263 | 741 | 649 | 409 | 137 | 41 | 101 | 162 | 39 | 27 | 271 | 209 | 74 | 8 | 80 | 3859 |
| Mute Swan | | | 1 | 8 | | | 1 | 4 | 1 | | 6 | 2 | | | | | | | | 23 |
| Tundra Swan | | | | | | | 1 | | | | | 2 | 1 | | 1 | | | | | 5 |
| Wood Duck | 22 | 10 | 14 | 49 | 8 | 28 | 132 | 22 | 11 | 5 | | 52 | 5 | 10 | 44 | 21 | 8 | 2 | 1 | 444 |
| Gadwall | | | | | | | 4 | | | | | 1 | | | 1 | | | | 2 | 8 |
| American Wigeon | | | | | | | 3 | | | | 8 | | | | | | | | | 11 |
| American Black Duck | 1 | | 2 | | | | 2 | | | | | 2 | | 3 | 56 | | | 13 | | 79 |
| Mallard | 37 | 8 | 98 | 6 | 33 | 123 | 82 | 83 | 44 | 42 | 20 | 16 | 18 | 52 | 210 | 30 | 11 | 2 | 11 | 926 |
| Blue-winged Teal | 1 | | | | | | 1 | 2 | | | | | | | 1 | | | | | 5 |
| Northern Shoveler | | | | | | | | | | | | | | | 1 | | | | | 1 |
| Green-winged Teal | | | | | | | | | | | | | | | 17 | | | | 2 | 19 |
| Ring-necked Duck | 2 | | | | | | | | 1 | | | | | | | | | | | 3 |
| Lesser Scaup | | | | | | | | | | | | | | 2 | | | | | | 2 |
| Surf Scoter | | | | | | | | | | | | | | | 16 | | | | | 16 |
| White-winged Scoter | | | | | | | | | | | | | | | 1 | | | | | 1 |
| Black Scoter | | | | | | | | | | | 5 | | | | 4 | | | | | 9 |
| scoter sp. | | | | | | | | | | | | | | | 56 | | | | | 56 |
| Long-tailed Duck | | 1 | | | | | | | | | | | | | | | | | | 1 |
| Bufflehead | 1 | | | | | | | | | | | | | | | | | | | 1 |
| Common Goldeneye | | | | | | | | | | | | | | | | | | | 2 | 2 |
| Hooded Merganser | 1 | | | 1 | | 6 | 1 | | | | | 1 | | | | | | | | 10 |
| Common Merganser | 7 | | 5 | 1 | 1 | | | | | | | | | | | | | | | 14 |
| Red-breasted Merganser | | 9 | | 6 | | | 1 | | | | | | | | 3 | | | | | 19 |
| Ruddy Duck | 5 | | | | | | 3 | | 1 | | | | | | 47 | | | | | 56 |
| Northern Bobwhite | | | | | | | | | | | | 1 | | | 9 | 5 | | | | 15 |
| Ring-necked Pheasant | | | | | | | | | 1 | | | | | | | | | | | 1 |
| Ruffed Grouse | 8 | | | | | | | | | | | | | | | | | | | 8 |
| Wild Turkey | 17 | 2 | 12 | 4 | 1 | 4 | 12 | 6 | 28 | 8 | 1 | 54 | | 12 | 30 | 94 | 6 | | 1 | 292 |
| Common Loon | 10 | | | | 4 | 1 | 4 | 3 | | 3 | 10 | 3 | | | 16 | | | | | 54 |
| Pied-billed Grebe | | | | 2 | | 1 | 1 | | | | | | | | | | | | | 4 |
| Horned Grebe | | | | 7 | 2 | | | | | | 8 | | | | 8 | | | | | 25 |
| Red-necked Grebe | 1 | | | 10 | | | | | | | | | | | | | | | | 11 |
| Double-crested Cormorant | 10 | 1 | 25 | 2 | 19 | 39 | 154 | 109 | 43 | 28 | 764 | 660 | | 190 | 621 | 36 | 34 | 21 | 74 | 2830 |
| American White Pelican | | | | | | | | | | | | | | | 1 | | | | | 1 |
| Brown Pelican | | | | | | | | | | | 2 | | | | 39 | | | | | 41 |
| American Bittern | | | 1 | | | 1 | | 1 | | | | | | | | 1 | | | | 4 |
| Least Bittern | | | | | | | 2 | | | | | 2 | | | 2 | | | | | 6 |
| Great Blue Heron | 2 | | 36 | 10 | 2 | 54 | 52 | 90 | 24 | 13 | 37 | 76 | 37 | 8 | 97 | 47 | 13 | 11 | 1 | 610 |
| Great Egret | | | 6 | 10 | | 1 | 1 | 1 | 2 | 3 | 5 | 2 | | | 106 | 2 | | 8 | 9 | 156 |
| Snowy Egret | | | | | | | | 3 | | 23 | 1 | | | 1 | 88 | 2 | | | 7 | 125 |
| Little Blue Heron | | | | | | | | | | | | | | | | | | 12 | 3 | 15 |
| Tricolored Heron | | | | | | | 1 | | | | | | | | 1 | | | | | 2 |
| Cattle Egret | | | | | | | | 1 | | | | | | | 2 | | | | 39 | 42 |
| Green Heron | 12 | 4 | 12 | 4 | 10 | 34 | 27 | 6 | 4 | 3 | 5 | 3 | | 3 | 11 | 3 | 1 | | 1 | 143 |
| Black-crowned Night-Heron | | | 19 | | | 1 | 4 | | | | | | | | | | | | 3 | 27 |
| Glossy Ibis | | | | | | | | | | 2 | 3 | 2 | | | 1 | 3 | | | 155 | 166 |

| | GA | AL | FR | MO | CA | HO | PG | AA | CH | CT | SM | HA | CE | TA | DO | CN | WI | SO | WO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Black Vulture | | 2 | 62 | 5 | 26 | 120 | 108 | 83 | 47 | 13 | 21 | 18 | 19 | 4 | 24 | 43 | 13 | | 2 | 610 |
| Turkey Vulture | 49 | 31 | 109 | | 69 | 160 | 74 | 154 | 64 | 72 | 104 | 64 | 11 | 13 | 278 | 184 | 65 | 14 | 53 | 1568 |
| Osprey | 4 | | | 9 | 3 | 10 | 53 | 91 | 128 | 60 | 117 | 27 | 3 | 35 | 266 | 36 | 29 | 1 | 7 | 879 |
| Mississippi Kite | | | | | | | | 3 | | | | | | | | | | | | 3 |
| Bald Eagle | 8 | 1 | 3 | 1 | 2 | 4 | 14 | 6 | 37 | 16 | 12 | 61 | 12 | 10 | 156 | 18 | 12 | 13 | 6 | 392 |
| Northern Harrier | | | 2 | | 1 | | 3 | 1 | 1 | 1 | | 3 | | | 6 | | | | | 18 |
| Sharp-shinned Hawk | 1 | | 4 | | 3 | 2 | | 10 | | | | | | | 2 | 1 | | | | 23 |
| Cooper's Hawk | 1 | | 2 | | 3 | 13 | 3 | 5 | 5 | 1 | 2 | | 1 | 1 | | 2 | | | 1 | 40 |
| Red-shouldered Hawk | 2 | | 17 | 6 | 6 | 43 | 14 | 18 | 8 | 4 | 1 | 6 | | | 2 | 5 | 1 | | 1 | 134 |
| Broad-winged Hawk | 10 | 1 | 2 | | 1 | 3 | | 52 | | | | | 2 | | | | | | | 71 |
| Red-tailed Hawk | 9 | 8 | 15 | 3 | 16 | 21 | 12 | 15 | 3 | 1 | 3 | 16 | 2 | 1 | 17 | 11 | 2 | 1 | | 156 |
| Clapper Rail | | | | | | | | | | | 5 | | | | 44 | | 2 | 19 | 2 | 72 |
| King Rail | | | | | | | 1 | | | | 1 | 2 | | | 1 | | | | | 5 |
| Virginia Rail | 1 | | | | | 1 | 1 | 1 | | | 2 | 4 | | 2 | 66 | 1 | 2 | 4 | | 85 |
| Sora | 1 | | | | | 1 | 1 | | | | 1 | 2 | | 1 | 2 | | | | | 9 |
| rail sp. | | | | | | | | | | | | | | | 3 | | | | | 3 |
| Common Gallinule | | | | | | | | | | | | | | | 8 | | | | | 8 |
| American Coot | | | 2 | | | | | 1 | | | 1 | | | | | | | | | 4 |
| Black-necked Stilt | | | | | | | | | | | | | | | 3 | | | 1 | | 4 |
| American Oystercatcher | | | | | | | | | | | | | | | 4 | | | | 5 | 9 |
| Black-bellied Plover | | | | | | | 2 | | 1 | | 1 | | | | 15 | 9 | | | 1280 | 1308 |
| Semipalmated Plover | | | | | | | 10 | | | | 3 | 1 | 1 | 3 | 207 | 73 | | 4 | 9 | 311 |
| Killdeer | 25 | 8 | 40 | 1 | 7 | 21 | 22 | 25 | 11 | 5 | 34 | 30 | 1 | 12 | 43 | 17 | 7 | | 2 | 311 |
| Spotted Sandpiper | 39 | 8 | 25 | 2 | 31 | 38 | 23 | 10 | 11 | 4 | 9 | 16 | 3 | 3 | 14 | 10 | 1 | | 6 | 253 |
| Solitary Sandpiper | 8 | 1 | 31 | | 5 | 50 | 20 | 29 | | 4 | 10 | 12 | 4 | 4 | 12 | 3 | 2 | 1 | | 196 |
| Greater Yellowlegs | | 1 | 5 | | | 11 | 5 | | | 5 | 6 | 2 | | 7 | 68 | 17 | 2 | 1 | 66 | 196 |
| Willet | | | | | | | | | | | | | | | 18 | | | 23 | 16 | 57 |
| Lesser Yellowlegs | 1 | 2 | 20 | | 1 | 5 | 12 | 2 | 2 | 20 | | 3 | 3 | 2 | 53 | 23 | 2 | 3 | 24 | 178 |
| Ruddy Turnstone | | | | | | | | | | | | | | | 6 | | | 1 | 13 | 20 |
| Sanderling | | | | | | | | | | | 5 | | | | 5 | | | | | 10 |
| Dunlin | | | | | | | | | | | 2 | | | | 712 | | | 109 | 291 | 1114 |
| Least Sandpiper | 15 | 6 | 33 | | | 31 | 55 | 6 | 3 | 18 | 14 | 9 | 57 | 3 | 209 | 77 | | 8 | 3 | 547 |
| White-rumped Sandpiper | | | | | | | | | | | | | | | 2 | | | | | 2 |
| Pectoral Sandpiper | | | | | | | | | | | | | | 2 | 6 | 1 | | | | 9 |
| Semipalmated Sandpiper | 3 | | 2 | | | | 2 | 12 | | 8 | 4 | | 1 | 3 | 58 | 2 | | 37 | | 132 |
| peep sp. | | | | | | | | | | | 35 | | | | | | | | | 35 |
| Short-billed Dowitcher | | | | | | | | | | | | | | | 18 | | | 3 | 32 | 53 |
| Wilson's Snipe | | | 1 | | | 1 | | 4 | | | 2 | 2 | | | 2 | 8 | | | | 20 |
| American Woodcock | 2 | | | | | 1 | | | | | | 7 | | | | 2 | | | | 12 |
| Bonaparte's Gull | | | | | | | | 3 | | 33 | | | | | 2 | 2 | | | | 40 |
| Laughing Gull | | | | | | | 170 | 603 | | 136 | 134 | | | 183 | 2161 | 1024 | 54 | 31 | 448 | 4944 |
| Ring-billed Gull | | | | 1 | | 6 | 142 | 249 | 73 | 92 | 246 | 50 | 3 | 31 | 36 | 135 | | | 18 | 1082 |
| Herring Gull | | | | | | | 12 | 48 | | 25 | 87 | 1 | 25 | 5 | 18 | 1 | | 2 | 55 | 279 |
| Lesser Black-backed Gull | | | | | | | | | | | | | | | | | | | 4 | 4 |
| Great Black-backed Gull | | | | | | | | 21 | | 95 | 23 | 3 | | 1 | 15 | | | 5 | 52 | 215 |
| gull sp. | | | | | | | | | | | 503 | | | | | | | | | 503 |
| Least Tern | | | | | | | | 7 | | 6 | | 14 | | 20 | 27 | 2 | 3 | 2 | 7 | 88 |
| Caspian Tern | | | | | | | | 46 | 8 | | | 23 | | | 2 | | | | | 79 |
| Black Tern | | | | | | | | | | | | 3 | | | | | | | | 3 |

| | GA | AL | FR | MO | CA | HO | PG | AA | CH | CT | SM | HA | CE | TA | DO | CN | WI | SO | WO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Common Tern | | | | | | | | 4 | | 11 | 2 | | | 12 | 5 | | | | 22 | 56 |
| Forster's Tern | | | | | | | 2 | 1 | 1 | 43 | 10 | 1 | | | 151 | 5 | 4 | 8 | 7 | 233 |
| Royal Tern | | | | | | | | 3 | | 10 | 16 | | | 1 | 1 | | | | 30 | 61 |
| tern sp. | | | | | | | | | | | 1 | | | | | | | | | 1 |
| Black Skimmer | | | | | | | | | | | | | | | | | | | 12 | 12 |
| Rock Pigeon | 100 | 20 | 101 | 1 | 68 | 114 | 36 | 46 | | 3 | 12 | 53 | | 24 | 48 | 72 | 2 | 6 | 2 | 708 |
| Mourning Dove | 120 | 61 | 254 | 27 | 138 | 330 | 264 | 146 | 92 | 82 | 127 | 59 | 12 | 33 | 145 | 170 | 49 | 6 | 17 | 2132 |
| Yellow-billed Cuckoo | 1 | 7 | 18 | 64 | 3 | 33 | 2 | 15 | 38 | 31 | 13 | 10 | 3 | 1 | 19 | 10 | 12 | 1 | 3 | 284 |
| Black-billed Cuckoo | | 2 | 1 | | | 8 | | 1 | | 1 | | 1 | | | | 1 | | | | 15 |
| Eastern Screech-Owl | 2 | 1 | 1 | | 1 | | | | | | | 2 | | 1 | 1 | 3 | 2 | | 1 | 15 |
| Great Horned Owl | | | 3 | | 3 | 2 | | | | 1 | | 3 | 1 | | 4 | 4 | 1 | | | 22 |
| Barred Owl | 2 | | 9 | | 1 | 10 | 1 | 8 | 6 | 3 | | 4 | 2 | 2 | 4 | 9 | 3 | | | 64 |
| Common Nighthawk | 2 | | | 100 | | 5 | | 1 | | | | | | | 1 | 5 | | | | 114 |
| Chuck-will's-widow | | | | | | | | | | | 4 | | | | 22 | 2 | 7 | | 6 | 41 |
| Eastern Whip-poor-will | 5 | | | | 1 | | | | | | | 35 | 5 | | 1 | 4 | 7 | | 2 | 60 |
| Chimney Swift | 24 | 57 | 165 | 10 | 94 | 125 | 23 | 76 | 61 | 22 | 32 | 22 | 6 | 41 | 52 | 249 | 14 | 4 | 8 | 1085 |
| Ruby-throated Hummingbird | 88 | 20 | 8 | 3 | 15 | 18 | | 25 | 5 | 14 | 12 | 16 | 1 | 7 | 21 | 26 | 11 | 2 | | 292 |
| Belted Kingfisher | 4 | | 13 | 3 | 4 | 19 | | 6 | 6 | 2 | 1 | 5 | 1 | 1 | | 3 | | | | 68 |
| Red-headed Woodpecker | 16 | | 11 | | 1 | 3 | | 3 | 8 | 7 | 7 | 2 | 2 | | 16 | | 3 | 1 | | 80 |
| Red-bellied Woodpecker | 37 | 19 | 140 | 38 | 69 | 247 | 15 | 82 | 81 | 52 | 37 | 48 | 14 | 4 | 42 | 43 | 15 | 1 | 4 | 988 |
| Yellow-bellied Sapsucker | 6 | | | | | | | | | | | | | | | | | | | 6 |
| Downy Woodpecker | 42 | 24 | 52 | 12 | 47 | 114 | 7 | 42 | 6 | 12 | 10 | 20 | 7 | 5 | 30 | 19 | 9 | 1 | | 459 |
| Hairy Woodpecker | 32 | 5 | 5 | 1 | 7 | 22 | 2 | 9 | 5 | 5 | 1 | 7 | 2 | 1 | 7 | 6 | | | | 117 |
| Northern Flicker | 48 | 8 | 17 | 2 | 16 | 45 | 4 | 12 | 2 | 5 | 11 | 5 | 3 | 3 | 20 | 12 | 3 | 1 | | 217 |
| Pileated Woodpecker | 18 | 8 | 23 | 10 | 16 | 44 | 2 | 12 | 15 | 13 | 5 | 20 | 1 | 2 | 19 | 28 | 5 | 2 | 2 | 245 |
| American Kestrel | 6 | | 2 | | 2 | | | 1 | | 1 | | 2 | | | 4 | 3 | | | | 21 |
| Merlin | | | | | | | | | | | 1 | | | | 1 | | | | | 2 |
| Peregrine Falcon | | | | | | | | | | 2 | 1 | | | | 1 | | | | | 4 |
| Olive-sided Flycatcher | | | | 1 | | | | | | | | | | | | | | | | 1 |
| Eastern Wood-Pewee | 14 | 6 | 91 | 14 | 34 | 115 | 8 | 27 | 52 | 61 | 36 | 25 | 9 | 10 | 45 | 27 | 29 | 2 | 1 | 606 |
| Yellow-bellied Flycatcher | | | | | | | | | 1 | | | | | | | | | | | 1 |
| Acadian Flycatcher | 10 | 4 | 58 | 14 | 19 | 169 | 3 | 25 | 87 | 68 | 46 | 61 | 11 | 2 | 15 | 10 | 16 | | 3 | 621 |
| Alder Flycatcher | 1 | | | | | | | | 0 | | | | | | | | | | | 1 |
| Willow Flycatcher | 4 | | 6 | | 3 | 3 | | | 0 | | | | | | | | | | | 16 |
| Least Flycatcher | 21 | | | | | 1 | | | 1 | | | 1 | | | 2 | | | | | 26 |
| Empid. sp. | | | | | 1 | | | | | | | | | | | | | | | 1 |
| Eastern Phoebe | 30 | 13 | 44 | 4 | 39 | 53 | 6 | 12 | 19 | 13 | 4 | 21 | 6 | 1 | 1 | 8 | 2 | | 2 | 278 |
| Great Crested Flycatcher | 13 | 5 | 79 | 48 | 50 | 105 | 17 | 40 | 53 | 40 | 74 | 33 | 6 | 25 | 270 | 85 | 70 | 12 | 14 | 1039 |
| Eastern Kingbird | 18 | 3 | 102 | 5 | 65 | 118 | 10 | 40 | 15 | 11 | 26 | 35 | 6 | 9 | 71 | 25 | 20 | 5 | 5 | 589 |
| White-eyed Vireo | 5 | 1 | 26 | 14 | 24 | 41 | 1 | 31 | 52 | 34 | 36 | 15 | 8 | 4 | 57 | 18 | 44 | 14 | 5 | 430 |
| Yellow-throated Vireo | 4 | 4 | 7 | 3 | 8 | 22 | 1 | 6 | 3 | 11 | 5 | 23 | 3 | 1 | 4 | | 1 | | 1 | 107 |
| Blue-headed Vireo | 29 | 1 | 2 | | | | | 3 | 19 | 10 | | | 2 | | | 1 | | | | 67 |
| Warbling Vireo | 2 | 7 | 34 | 2 | 11 | 36 | | 2 | | 1 | | 15 | 3 | | | | | | | 113 |
| Red-eyed Vireo | 158 | 66 | 254 | 90 | 106 | 460 | 28 | 151 | 258 | 176 | 122 | 133 | 38 | 14 | 88 | 31 | 35 | 6 | 12 | 2226 |

| | GA | AL | FR | MO | CA | HO | PG | AA | CH | CT | SM | HA | CE | TA | DO | CN | WI | SO | WO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Blue Jay | 109 | 51 | 244 | 28 | 131 | 519 | 52 | 378 | 40 | 70 | 55 | 97 | 18 | 19 | 56 | 70 | 32 | | 5 | 1974 |
| American Crow | 162 | 24 | 236 | 16 | 260 | 350 | 21 | 171 | 123 | 82 | 133 | 101 | 20 | 37 | 153 | 136 | 30 | 8 | 3 | 2066 |
| Fish Crow | | 5 | 26 | 10 | 15 | 51 | 16 | 52 | 7 | 27 | 14 | 20 | 2 | 9 | 31 | 36 | 13 | 2 | 6 | 342 |
| crow sp. | | | 7 | | 30 | 130 | 40 | 17 | | | 1 | | | 1 | 21 | | 19 | | | 266 |
| Common Raven | 24 | 6 | 3 | | | | 3 | | | | | | | | | | | | | 36 |
| Horned Lark | 1 | | 49 | | 8 | 23 | | | | 4 | 2 | 1 | 3 | 1 | 40 | 46 | 2 | | 7 | 187 |
| Purple Martin | 11 | | 42 | | 30 | 89 | | 11 | 113 | 10 | 37 | 53 | | 40 | 314 | 364 | 66 | | 4 | 1184 |
| Tree Swallow | 142 | 8 | 92 | 28 | 38 | 169 | 6 | 89 | 59 | 8 | 12 | 309 | 15 | 13 | 204 | 100 | 23 | 10 | | 1325 |
| Northern Rough-winged Swallow | 34 | 20 | 43 | | 6 | 56 | 1 | 8 | 11 | 28 | 4 | 145 | | 2 | 2 | 7 | | | | 367 |
| Bank Swallow | | | | | 5 | | | 18 | | | | 100 | | | 3 | 10 | | | | 136 |
| Cliff Swallow | 18 | 25 | 9 | | 7 | 83 | 5 | 2 | | | 1 | | | | 2 | 4 | | | | 156 |
| Barn Swallow | 190 | 31 | 293 | 19 | 121 | 304 | 24 | 163 | 153 | 115 | 196 | 300 | 12 | 35 | 496 | 165 | 81 | 11 | 46 | 2755 |
| Carolina Chickadee | | | 119 | 14 | 111 | 259 | 31 | 135 | 76 | 63 | 71 | 60 | 25 | 16 | 152 | 50 | 34 | 10 | 2 | 1228 |
| Black-capped Chickadee | 116 | 37 | | | | | | | | | | | | | | | | | | 153 |
| Tufted Titmouse | 78 | 44 | 157 | 57 | 117 | 365 | 22 | 142 | 187 | 168 | 105 | 58 | 19 | 21 | 150 | 98 | 55 | 7 | 10 | 1860 |
| Red-breasted Nuthatch | 1 | | | | | | | | | | | | | | | | | | | 1 |
| White-breasted Nuthatch | 63 | 25 | 30 | 8 | 23 | 59 | 4 | 19 | 11 | 19 | 7 | 17 | 3 | 3 | | 9 | 2 | | | 302 |
| Brown-headed Nuthatch | | | | | | | | | | 6 | 5 | | | 3 | 40 | | 2 | 14 | | 70 |
| Brown Creeper | 6 | | | | | | 8 | | | | | | | | | | | | | 14 |
| House Wren | 58 | 18 | 123 | 15 | 60 | 118 | | 11 | 13 | 6 | 6 | 18 | 2 | | 51 | 13 | 15 | 20 | 9 | 556 |
| Winter Wren | 2 | | | | | | | | | | | | | | | | | | | 2 |
| Marsh Wren | 1 | | | | | | | | | 1 | 2 | 3 | | | 48 | 2 | 5 | 18 | | 80 |
| Carolina Wren | 11 | 25 | 166 | 31 | 59 | 222 | 27 | 88 | 78 | | 68 | 31 | 15 | 26 | 115 | 68 | 69 | 10 | 9 | 1118 |
| Blue-gray Gnatcatcher | 31 | 19 | 161 | 52 | 93 | 290 | 166 | 75 | 112 | 63 | 21 | 122 | 10 | 4 | 55 | 6 | 55 | 8 | 2 | 1345 |
| Ruby-crowned Kinglet | 13 | | | | | 2 | | | | 1 | | | | 1 | 1 | | | | | 18 |
| Eastern Bluebird | 29 | 8 | 97 | 16 | 58 | 145 | 71 | 72 | 80 | 35 | 58 | 30 | 4 | 19 | 122 | 69 | 10 | 6 | 6 | 935 |
| Veery | 3 | | 7 | | | 10 | 2 | 4 | 2 | 16 | 3 | 6 | 7 | 1 | | | | | | 61 |
| Gray-cheeked Thrush | | | | | | | | 1 | | | 1 | | 1 | | | | | | | 3 |
| Swainson's Thrush | 2 | | 10 | 5 | | 29 | 18 | 1 | 5 | 6 | 5 | 17 | 5 | 1 | | | | | 1 | 105 |
| Hermit Thrush | 14 | | | | | 3 | | 2 | | | | | | | | 4 | | | | 23 |
| Wood Thrush | 30 | 11 | 147 | 15 | 96 | 261 | 99 | 48 | 77 | 56 | 37 | 28 | 42 | 8 | 34 | 17 | 32 | | 9 | 1047 |
| thrush sp. | | | | | | | | | | | | | | 1 | | | | | | 1 |
| American Robin | 393 | 267 | 700 | 7 | 208 | 583 | 290 | 470 | 84 | 73 | 101 | 117 | 13 | 88 | 537 | 513 | 194 | 8 | 33 | 4679 |
| Gray Catbird | 171 | 61 | 413 | 89 | 465 | 497 | 135 | 114 | 28 | 50 | 81 | 107 | 26 | 12 | 50 | 38 | 27 | 11 | 8 | 2383 |
| Brown Thrasher | 38 | 9 | 37 | 2 | 19 | 30 | 19 | 14 | 51 | 14 | 31 | 19 | 1 | 19 | 14 | 33 | 7 | | 2 | 359 |
| Northern Mockingbird | 2 | 7 | 105 | 2 | 59 | 154 | 63 | 98 | 15 | 26 | 101 | 37 | 11 | 27 | 158 | 100 | 27 | 3 | 14 | 1009 |
| European Starling | 264 | 283 | 1131 | 96 | 402 | 610 | 600 | 398 | 254 | 124 | 304 | 170 | 3 | 61 | 680 | 569 | 149 | 2 | 169 | 6269 |
| Cedar Waxwing | 17 | 13 | 144 | 46 | 3 | 157 | 387 | 172 | 126 | 21 | 58 | 123 | | 3 | 47 | 28 | | | 1 | 1346 |
| Ovenbird | 156 | 7 | 69 | 11 | 52 | 159 | 93 | 31 | 127 | 66 | 65 | 30 | 48 | 14 | 84 | 28 | 41 | 15 | 8 | 1104 |
| Worm-eating Warbler | 2 | 4 | 2 | | 9 | 11 | 2 | 2 | 5 | 24 | 15 | 10 | 6 | 3 | 10 | 3 | 21 | | 1 | 130 |
| Louisiana Waterthrush | 8 | 1 | 17 | | 2 | 55 | 8 | 2 | 11 | 11 | 10 | 20 | | 1 | 2 | 1 | 10 | | 2 | 161 |
| Northern Waterthrush | 10 | 3 | 1 | 1 | 1 | 16 | 16 | 2 | 2 | 1 | 2 | 7 | 1 | 1 | 2 | 1 | | | 1 | 68 |
| Golden-winged Warbler | 2 | | | | | | | | | | | | | | | | | | | 2 |
| Blue-winged Warbler | | 1 | 1 | 1 | 2 | 7 | | | | | | 2 | | | | | | | | 14 |
| Black-and-white Warbler | 41 | 4 | 9 | 1 | 16 | 63 | 23 | 15 | 37 | 31 | 24 | 30 | 8 | | 14 | 8 | 8 | | 1 | 333 |
| Prothonotary Warbler | 1 | | 4 | 4 | | | 16 | 20 | 19 | 1 | 1 | 13 | | | 56 | 7 | 19 | | 3 | 164 |

| | GA | AL | FR | MO | CA | HO | PG | AA | CH | CT | SM | HA | CE | TA | DO | CN | WI | SO | WO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Swainson's Warbler | | | | | | | | | | 1 | | | | | | | | | | 1 |
| Tennessee Warbler | 9 | | 2 | | 1 | 2 | | | 1 | | | | | | | | | | | 15 |
| Nashville Warbler | 1 | 3 | | | | 2 | 3 | | | | | 1 | 1 | | | | | | | 11 |
| Mourning Warbler | | | | | | | | | | | | 1 | | | | | | | | 1 |
| Kentucky Warbler | 5 | | 1 | | 3 | 5 | 1 | 3 | 4 | 13 | 7 | 9 | 4 | | | 6 | 1 | | | 62 |
| Common Yellowthroat | 170 | 17 | 79 | 16 | 100 | 251 | 148 | 95 | 72 | 122 | 70 | 124 | 13 | 14 | 262 | 33 | 41 | 68 | 4 | 1699 |
| Hooded Warbler | 30 | 5 | 7 | | 5 | 10 | 21 | 8 | 53 | 34 | 13 | 3 | 6 | | 1 | | | | | 196 |
| American Redstart | 91 | 43 | 54 | 6 | 15 | 110 | 63 | 23 | 15 | 30 | 69 | 65 | 8 | 1 | 25 | 7 | 3 | | | 628 |
| Cape May Warbler | | 1 | 5 | 1 | | 5 | 2 | | | | | | 1 | | | | | | | 15 |
| Cerulean Warbler | 18 | 3 | 5 | | | 1 | | | | | | 20 | | | | | | | | 47 |
| Northern Parula | 29 | 10 | 46 | 9 | 42 | 173 | 109 | 38 | 146 | 75 | 61 | 108 | 20 | 6 | 13 | 8 | 7 | | 2 | 902 |
| Magnolia Warbler | 34 | 5 | 14 | 7 | 7 | 42 | 21 | 8 | 1 | 9 | 3 | 24 | 4 | | 1 | | | | | 180 |
| Bay-breasted Warbler | 5 | 2 | 2 | | 2 | 4 | 1 | | | 1 | | | | | | | | | | 17 |
| Blackburnian Warbler | 20 | 3 | 4 | | 1 | 7 | 3 | | 1 | 1 | | 4 | | | 1 | | | | | 45 |
| Yellow Warbler | 78 | 22 | 78 | 2 | 53 | 70 | 32 | 26 | 8 | 9 | 17 | 34 | 6 | 1 | 5 | 1 | 2 | 4 | | 448 |
| Chestnut-sided Warbler | 93 | 5 | 10 | | 3 | 49 | 7 | 1 | | 4 | | 5 | 1 | | | 1 | | | | 179 |
| Blackpoll Warbler | | 7 | 26 | 2 | 4 | 50 | 33 | 4 | 21 | 51 | 16 | 28 | 3 | 2 | 2 | 2 | 4 | | 1 | 256 |
| Black-throated Blue Warbler | 36 | 4 | 19 | 1 | 13 | 51 | 32 | 7 | 4 | 37 | 14 | 26 | 6 | | | 4 | | | | 254 |
| Palm Warbler | 1 | 1 | 2 | | 1 | 4 | 1 | | | | | | | | | 2 | | | | 12 |
| Pine Warbler | 3 | 1 | | | 4 | 7 | 5 | 11 | 21 | 16 | 36 | | 9 | 5 | 101 | 6 | 23 | 12 | 1 | 261 |
| Yellow-rumped Warbler | 34 | 11 | 47 | 2 | 24 | 76 | 76 | 35 | 11 | 13 | 66 | 62 | 11 | 3 | 34 | 18 | 3 | | | 526 |
| Yellow-throated Warbler | 1 | 1 | 1 | | | 1 | 6 | 2 | 19 | 23 | 8 | 1 | | | 1 | | 7 | | 6 | 77 |
| Prairie Warbler | | 3 | 10 | 4 | 2 | 21 | 19 | 17 | 19 | 10 | 27 | 11 | | | 31 | 16 | 19 | 6 | 6 | 221 |
| Black-throated Green Warbler | 76 | 9 | 17 | 2 | 6 | 36 | 16 | 1 | 3 | 6 | 7 | 10 | 6 | | | | | 1 | | 196 |
| Canada Warbler | 5 | | 3 | 2 | 1 | 16 | 8 | | 3 | 1 | | 9 | 2 | | | | | | | 50 |
| Wilson's Warbler | | | 1 | | 1 | 6 | 2 | 2 | | | | 2 | | | | | | | | 14 |
| warbler sp. | | | | | | | | | | | | | 5 | | | | | | | 5 |
| Yellow-breasted Chat | 4 | 4 | 7 | 6 | 1 | 11 | 15 | 6 | 17 | 13 | 12 | 15 | 3 | 2 | 11 | 11 | 9 | 1 | 1 | 149 |
| Eastern Towhee | 193 | 31 | 130 | 12 | 72 | 184 | 75 | 44 | 35 | 32 | 39 | 22 | 24 | 1 | 45 | 7 | 6 | 12 | 4 | 968 |
| Chipping Sparrow | 143 | 45 | 328 | 18 | 144 | 319 | 110 | 73 | 104 | 44 | 104 | 76 | 6 | 52 | 191 | 106 | 55 | 5 | 10 | 1933 |
| Field Sparrow | 63 | 7 | 118 | 9 | 35 | 45 | 26 | 54 | 15 | 7 | 12 | 14 | 3 | 4 | 16 | 21 | 11 | | | 460 |
| Vesper Sparrow | | | 15 | | | | | | | | | | | | | 7 | | | | 22 |
| Savannah Sparrow | 16 | 2 | | | 1 | 34 | 27 | 1 | 5 | 3 | 9 | 51 | | | 8 | 2 | | | | 159 |
| Grasshopper Sparrow | 10 | | 44 | 2 | 11 | 28 | 20 | 7 | 8 | 8 | 27 | 11 | 3 | 9 | 39 | 19 | 1 | | 1 | 248 |
| Saltmarsh Sparrow | | | | | | | | | | | | | | | 1 | | | 3 | | 4 |
| Seaside Sparrow | | | | | | | | | | | | | | | 125 | | 3 | 48 | | 176 |
| Song Sparrow | 144 | 54 | 170 | 4 | 95 | 175 | 67 | 85 | 18 | 30 | 20 | 14 | 1 | 1 | 5 | 10 | 4 | 10 | | 907 |
| Lincoln's Sparrow | | | | | 1 | 1 | 1 | | | | | 1 | | | | | | | | 4 |
| Swamp Sparrow | 39 | | | 1 | 7 | 15 | 7 | 1 | | 3 | 7 | 6 | | | 12 | 1 | | | | 99 |
| White-throated Sparrow | 13 | 15 | 8 | 2 | 19 | 37 | 26 | 49 | | 8 | | 17 | 4 | 5 | 12 | 8 | 11 | | 3 | 237 |
| White-crowned Sparrow | 9 | 4 | 6 | | 2 | 3 | 2 | | | | | | | | | | | | | 26 |

| | GA | AL | FR | MO | CA | HO | PG | AA | CH | CT | SM | HA | CE | TA | DO | CN | WI | SO | WO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Dark-eyed Junco | 11 | 1 | | | | 1 | 1 | 1 | | | | | | | | | | | | 15 |
| Summer Tanager | | | | 3 | | | 14 | 7 | 20 | 37 | 37 | 1 | | 5 | 55 | 7 | 13 | | 4 | 203 |
| Scarlet Tanager | 111 | 32 | 88 | 16 | 51 | 171 | 79 | 26 | 62 | 33 | 31 | 42 | 15 | 4 | 12 | 14 | 5 | | | 792 |
| Northern Cardinal | 103 | 70 | 490 | 71 | 260 | 686 | 349 | 347 | 156 | 176 | 232 | 144 | 22 | 30 | 249 | 174 | 71 | 18 | 21 | 3669 |
| Rose-breasted Grosbeak | 78 | 10 | 3 | 2 | 8 | 5 | 2 | 1 | 1 | 4 | 1 | 5 | | 1 | | 1 | 1 | | 1 | 124 |
| Blue Grosbeak | | | 10 | | | 5 | 22 | 21 | 19 | 10 | 22 | 11 | 1 | 11 | 85 | 42 | 26 | 7 | 1 | 293 |
| Indigo Bunting | 76 | 45 | 231 | 67 | 67 | 209 | 181 | 87 | 159 | 74 | 134 | 107 | 11 | 18 | 212 | 87 | 87 | 7 | 14 | 1873 |
| Bobolink | 65 | 2 | 151 | | | 194 | 80 | | 30 | | 10 | 115 | 15 | | 14 | 43 | | | | 719 |
| Red-winged Blackbird | 520 | 96 | 606 | 43 | 353 | 636 | 530 | 295 | 217 | 315 | 234 | 133 | 22 | 81 | 1147 | 212 | 121 | 80 | 67 | 5708 |
| Eastern Meadowlark | 29 | 4 | 62 | 1 | 10 | 12 | 18 | 3 | 8 | 4 | 41 | 25 | 2 | | 35 | 4 | 9 | 7 | 7 | 281 |
| Rusty Blackbird | | | | | | 1 | 1 | | | | | | | | | | | | | 2 |
| Common Grackle | 168 | 120 | 425 | 9 | 151 | 211 | 307 | 356 | 276 | 140 | 354 | 65 | 4 | 113 | 1072 | 720 | 237 | 5 | 165 | 4898 |
| Boat-tailed Grackle | | | | | | | | | | | 2 | | | | 21 | | | 5 | 8 | 36 |
| Brown-headed Cowbird | 57 | 7 | 108 | 16 | 84 | 192 | 112 | 100 | 87 | 67 | 57 | 84 | 18 | 43 | 250 | 162 | 20 | 6 | 13 | 1483 |
| Orchard Oriole | 10 | 4 | 15 | 12 | 9 | 63 | 61 | 32 | 30 | 11 | 11 | 52 | 9 | 15 | 72 | 27 | 11 | 11 | | 455 |
| Baltimore Oriole | 107 | 18 | 98 | 7 | 54 | 153 | 45 | 8 | | 1 | | 47 | 8 | 1 | 3 | 14 | | | 1 | 565 |
| House Finch | 22 | 34 | 90 | | 55 | 117 | 29 | 124 | 27 | 27 | 22 | 24 | | 11 | 16 | 29 | 10 | 2 | | 639 |
| Purple Finch | 34 | 3 | | | | | | | | | | | | | | | | | | 37 |
| American Goldfinch | 269 | 82 | 309 | 57 | 145 | 303 | 133 | 174 | 59 | 87 | 43 | 78 | 6 | 16 | 147 | 105 | 43 | | 5 | 2061 |
| House Sparrow | 44 | 102 | 219 | 29 | 113 | 257 | 12 | 96 | 59 | 60 | 117 | 13 | 1 | 14 | 108 | 250 | 10 | 2 | 4 | 1510 |
| Total Species | 149 | 113 | 138 | 103 | 125 | 145 | 161 | 144 | 121 | 137 | 140 | 150 | 107 | 112 | 171 | 136 | 105 | 84 | 113 | 238 |
| Total Individuals | 6660 | 2431 | 11375 | 1721 | 5905 | 14784 | 6952 | 8199 | 5338 | 4411 | 6645 | 6018 | 1004 | 1817 | 15704 | 7829 | 2630 | 915 | 3666 | 114004 |

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# 2014 Maryland Fall Count

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The annual Maryland Fall Count is held on the third weekend in September with the choice of Saturday or Sunday at the discretion of the county and/or compiler. In 2014, eleven of Maryland's 23 counties submitted results. Seven counties counted on 20 September, four on 21 September (Table 1). Participation in the Fall Count is routinely significantly less than the annual May Count. Receiving results from eleven counties is typical, but for several counties it has been a long held tradition, with this year being the 24th count for Allegany, 21st for Howard, and 19th for Dorchester.

**Table 1. 2014 Maryland Fall Count: participating counties, county codes, survey dates, and compilers**.

| County | Code | Survey Date | Compiler |
|---|---|---|---|
| Allegany | AL | 21 September 2014 | Chuck Hager |
| Carroll | CA | 20 September 2014 | Don Jewell |
| Howard | HO | 20 September 2014 | Mike McClure, Chuck Stirrat |
| Baltimore | BA | 20 September 2014 | Joel Martin |
| Harford | HA | 20 September 2014 | Rick Cheicante |
| Cecil (hawk watch) | CE | 20 September 2014 | John Taylor |
| Prince George's | PG | 21 September 2014 | Dave Mozurkewich |
| Calvert | CT | 21 September 2014 | David Gillum |
| Kent | KE | 21 September 2014 | Walter Ellison, Nancy Martin |
| Caroline | CN | 20 September 2014 | Debby Bennett |
| Dorchester | DO | 20 September 2014 | Harry Armistead |

As would be expected weather varied over the extent of the state and from Saturday to Sunday. Temperatures ranged from lows in the high 50s °F to low 60s °F and highs in the 70s °F to the high 80s °F. All reported calm to light winds. Most reported clouds early with clearing in afternoon. There were no reports of precipitation on Saturday, whereas many on Sunday reported early morning fog. The exception was Allegany County on Sunday where there was heavy rain overnight and moderate rain through the morning with clearing in the afternoon and temperatures ranging from 51 °F (10.6 °C) to 62 °F (16.7 °C). Almost all compilers described the days birding as slow with limited migrants.

A total of 192 field observers in 120 parties turned up 191 species and 66,794 individual birds. Observers spent a total of 435.0 hours and covered 298.6 miles on foot and spent 28.8 hours stationary. Birders spent 182.2 hours and 1807.6 miles birding by car. Observers covered 12.5 miles in 7.7 hours by other modes of transport. Participants in five counties reported spending 12.9 hours driving 70.6 miles while owling. Feeder watchers spent 32.0 hours (Table 2).

**Table 2. 2014 Maryland Fall Count: summary.**

| | AL | CA | HO | BA | HA | CE | PG | CT | KT | CN | DO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Total Species | 84 | 103 | 121 | 114 | 70 | 36 | 119 | 102 | 99 | 123 | 147 | 191 |
| Total Birds | 2896 | 4337 | 11027 | 4105 | 886 | 620 | 9212 | 3416 | 5723 | 10,382 | 14,190 | 66,794 |
| Start Time | 4:45 | 6:00 | 5:45 | | | | | 5:40 | 6:10 | 5:00 | 5:30 | |
| Stop Time | 18:00 | 19:00 | 20:15 | | | | | 17:00 | 19:30 | 20:00 | 19:45 | |
| Parties | 7 | 10 | 37 | 18 | 4 | 1 | 15 | 6 | 3 | 11 | 8 | 120 |
| Individual People | 10 | 17 | 58 | 20 | 9 | 1 | 20 | 11 | 5 | 20 | 21 | 192 |
| Hours Driving | 31.5 | 23.9 | 29.5 | | | | 23.0 | 8.2 | 16.3 | 22.8 | 27.0 | 182.2 |
| Miles Driving | 150.0 | 225.1 | 382.0 | | | | 201.5 | 43.0 | 103.0 | 318.0 | 385.0 | 1807.6 |
| Hours Walking | 7.0 | 30.2 | 161.1 | 34.9 | 12.0 | | 64.0 | 28.8 | 7.0 | 48.0 | 42.0 | 435.0 |
| Miles Walking | 6.5 | 30.5 | 112.6 | 14.3 | 8.0 | | 46.1 | 21.9 | 5.2 | 11.5 | 42.0 | 298.6 |
| Stationary Hours | 7.0 | 6.0 | | | | 5.0 | | 7.3 | | 3.5 | | 28.8 |
| Feeder Hours | 4.5 | 3.0 | 10.5 | | | | 5.0 | | | 9.0 | | 32.0 |
| Hours Owling | 1.5 | | 0.8 | | | | 0.5 | 1.1 | | 2.0 | 7.0 | 12.9 |
| Miles Owling | | | 1.2 | | | | | 0.4 | | 20.0 | 49.0 | 70.6 |
| Hours Other | | 2.5 | | | | | | | | 5.2 | | 7.7 |
| Miles Other | | 4.0 | | | | | | | | 8.5 | | 12.5 |

The following highlights were noted. A single American Avocet was observed in Carroll County and a single American White Pelican was found in Dorchester County. Two Buff-breasted Sandpipers in Dorchester County were new for that count. Four American Golden-Plovers in Dorchester County had been present for some time. Eight Sanderlings bracketed the state, with 3 in Allegany County and 5 in Dorchester. The 9 Sandwich Terns in Dorchester was a new high count and only the second record for that count. Bald Eagle sightings were high with a total of 364 (187 in Dorchester) and were reported from all counts. Forster Tern numbers totaled 1039 in six counties (Dorchester: 632, Kent: 249). Brown-headed Nuthatches totaled 190 (Dorchester new high of 178). Carolina Chickadees were present in large numbers with a total of 1177.

In addition to the American Avocet and American White Pelican, other species with only a single individual found statewide included Mute Swan (Calvert), Hooded Merganser (Harford), Ruddy Duck (Dorchester), Yellow-crowned Night-Heron (Calvert), White-rumped Sandpiper (Dorchester), American Woodcock (Dorchester), Yellow-bellied Flycatcher (Harford), Worm-eating

Warbler (Carroll), Prothonotary Warbler (Howard), Canada Warbler (Howard), and Vesper Sparrow (Carroll) (Table 3).

There were 31 species that were observed in only one county. Fifteen of these were observed in Dorchester County, with the next highest number being four in Carroll County. This reflects in part the excellent coverage in Dorchester, but also is likely due to the absence of other reports from the lower Eastern Shore. Twenty-four species were reported for all 11 counts.

Thank you to all participants and especially the compilers. The 2015 Fall Count will already have taken place by the time the Fall 2015 issue of *Maryland Birdlife* is published, but I look forward to the count in 2016 (17 or 18 September). I hope that more participants will enjoy the experience and additional counties will choose to participate in the future, especially in Worcester and Wicomico Counties.

**Table 3. 2014 Maryland Fall Count: observed species.**

| Species | AL | CA | HO | BA | HA | CE | PG | CT | KE | CN | DO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Canada Goose | 22 | 477 | 996 | 248 | 55 | 21 | 1321 | 175 | 1015 | 325 | 660 | 5315 |
| Mute Swan | | | | | | | | 1 | | | | 1 |
| Wood Duck | 22 | 2 | 25 | 8 | | | 99 | 11 | 30 | 13 | 199 | 409 |
| American Wigeon | | | | | | | 6 | | 7 | | 2 | 15 |
| American Black Duck | | | 2 | 1 | | | 2 | | 15 | 7 | 25 | 52 |
| Mallard | 52 | 102 | 139 | 89 | 79 | | 421 | 42 | 104 | 37 | 609 | 1674 |
| Blue-winged Teal | 4 | | | 6 | | | 4 | | 21 | | 32 | 67 |
| Northern Shoveler | | | | | | | 17 | | | | 2 | 19 |
| Northern Pintail | | | | | | | | | 30 | 4 | 63 | 97 |
| Green-winged Teal | | 2 | 3 | 6 | | | 2 | | 12 | | 67 | 92 |
| Hooded Merganser | | | | | 1 | | | | | | | 1 |
| Ruddy Duck | | | | | | | | | | | 1 | 1 |
| Northern Bobwhite | | | | | | | | | | | 7 | 7 |
| Wild Turkey | 38 | | | | 8 | | | | 3 | 54 | 22 | 125 |
| Common Loon | | | | | | | | 3 | | 4 | | 7 |
| Pied-billed Grebe | | 1 | | | | | 4 | 1 | 1 | | | 7 |
| Double-crested Cormorant | | 9 | 22 | 531 | 30 | | 43 | 25 | 370 | 44 | 254 | 1328 |
| American White Pelican | | | | | | | | | | | 1 | 1 |
| Brown Pelican | | | | | | | | | | | 24 | 24 |
| American Bittern | | 1 | | | | | | | | 1 | | 2 |
| Great Blue Heron | 3 | 18 | 24 | 18 | 6 | | 31 | 24 | 26 | 19 | 71 | 240 |
| Great Egret | | 1 | 4 | 21 | 1 | | 41 | 2 | 1 | 3 | 94 | 168 |
| Snowy Egret | | | | | | | | | 1 | 1 | 81 | 83 |
| Little Blue Heron | | | | | | | | | | | 3 | 3 |
| Tricolored Heron | | | | | | | | | | | 22 | 22 |
| Cattle Egret | | | | | | | | | 53 | | | 53 |
| Green Heron | 6 | 5 | 17 | | | | 2 | 2 | 2 | | 1 | 35 |
| Black-crowned Night-Heron | | | 2 | 1 | | | 1 | 2 | 1 | | 1 | 8 |
| Yellow-crowned Night-Heron | | | | | | | | 1 | | | | 1 |
| Glossy Ibis | | | | | | | | | | 3 | | 3 |

| Species | AL | CA | HO | BA | HA | CE | PG | CT | KE | CN | DO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Black Vulture | 10 | 66 | 168 | 21 | 10 | 1 | 107 | 52 | 20 | 52 | 25 | 532 |
| Turkey Vulture | 151 | 113 | 272 | 29 | 15 | 35 | 77 | 84 | 79 | 285 | 245 | 1385 |
| Osprey | | 3 | 4 | 8 | 2 | | 2 | 7 | 6 | 7 | 16 | 55 |
| Bald Eagle | 2 | 2 | 4 | 15 | 3 | 17 | 16 | 74 | 33 | 11 | 187 | 364 |
| Northern Harrier | | 1 | 2 | 6 | | | | | 1 | 2 | 7 | 19 |
| Sharp-shinned Hawk | 4 | 5 | 10 | 11 | | 13 | 3 | | | | 9 | 55 |
| Cooper's Hawk | 1 | 6 | 17 | 6 | | 11 | 5 | 2 | | 7 | 3 | 58 |
| unidentified accipiter sp. | | | 6 | | | | 3 | | | | | 9 |
| Red-shouldered Hawk | 2 | 15 | 57 | 15 | 4 | | 16 | 1 | | 12 | 1 | 123 |
| Broad-winged Hawk | 220 | 11 | 7 | 2 | | | 4 | | | | 2 | 246 |
| Red-tailed Hawk | 11 | 14 | 15 | 9 | 4 | 2 | 8 | 6 | 3 | 9 | 9 | 90 |
| Clapper Rail | | | | | | | | | | | 31 | 31 |
| Virginia Rail | | | | | | | | | | | 18 | 18 |
| Sora | | | | | | | 5 | | | | | 5 |
| Common Gallinule | | | | | | | | | | | 5 | 5 |
| American Avocet | | 1 | | | | | | | | | | 1 |
| Black-bellied Plover | | | | | | | 1 | | | | 6 | 7 |
| American Golden-Plover | | | | | | | | | | | 4 | 4 |
| Semipalmated Plover | | | 1 | | | | | | | 4 | 16 | 21 |
| Killdeer | 60 | 26 | 73 | 6 | 2 | | 92 | 10 | 29 | 300 | 129 | 727 |
| Spotted Sandpiper | 2 | 1 | 4 | | | | | | 2 | 8 | 4 | 21 |
| Solitary Sandpiper | | 2 | 11 | 1 | | | 1 | | | | | 15 |
| Greater Yellowlegs | | | | 2 | | | 3 | | 1 | 18 | 37 | 61 |
| Lesser Yellowlegs | 2 | 8 | | 24 | | | | | 9 | 10 | 39 | 92 |
| Sanderling | 3 | | | | | | | | | | 5 | 8 |
| Least Sandpiper | 2 | 4 | 18 | 3 | | | 4 | | 3 | | 22 | 56 |
| White-rumped Sandpiper | | | | | | | | | | | 1 | 1 |
| Buff-breasted Sandpiper | | | | | | | | | | | 2 | 2 |
| Pectoral Sandpiper | 5 | | | 1 | | | 2 | | 11 | 1 | 6 | 26 |
| Semipalmated Sandpiper | 2 | | 7 | 2 | | | | | 6 | | 15 | 32 |
| unidentified peep sp. | | | | | | | | | 1 | | 30 | 31 |
| Wilson's Snipe | | | | | | | | | | 6 | 1 | 7 |
| American Woodcock | | | | | | | | | | | 1 | 1 |
| Laughing Gull | | | | 57 | | | 1195 | 194 | 243 | 319 | 1404 | 3412 |
| Ring-billed Gull | | | 7 | 207 | | 4 | 275 | 255 | 84 | 180 | 107 | 1119 |
| Herring Gull | | | | 23 | | | 1 | 358 | 5 | 6 | 244 | 637 |
| Great Black-backed Gull | | | | 6 | | | | 419 | 14 | 1 | 81 | 521 |
| unidentified gull sp. | | | | | | | 20 | 30 | | 71 | | 121 |
| Caspian Tern | | | | 2 | | | 22 | | 19 | | 12 | 55 |
| Common Tern | | | | 4 | | | | 1 | 4 | 2 | 7 | 18 |
| Forster's Tern | | | | 11 | | | 46 | 96 | 249 | 5 | 632 | 1039 |
| Royal Tern | | | | 3 | | | | 7 | 38 | | 180 | 228 |
| Sandwich Tern | | | | | | | | | | | 9 | 9 |
| Rock Pigeon | 122 | 223 | 293 | 160 | | | 49 | 11 | | 125 | 34 | 1017 |
| Mourning Dove | 130 | 238 | 382 | 122 | 22 | 1 | 538 | 122 | 26 | 182 | 182 | 1945 |
| Yellow-billed Cuckoo | | 3 | 4 | 4 | 1 | | 6 | | 1 | 4 | | 23 |
| Barn Owl | | | | | | | 1 | 2 | | | | 3 |
| Eastern Screech-Owl | 4 | 1 | 3 | | | | | 2 | 2 | 10 | 24 | 46 |
| Great Horned Owl | 1 | 1 | 1 | | | | | | 1 | 13 | 27 | 44 |
| Barred Owl | | 2 | 7 | | | | 3 | 3 | 1 | 11 | 6 | 33 |
| Common Nighthawk | | | 2 | | 1 | | | | 6 | | | 9 |
| Chimney Swift | 17 | 12 | 184 | 289 | 3 | 11 | 291 | | 10 | 596 | 2 | 1415 |
| Ruby-throated Hummingbird | 17 | 30 | 16 | 10 | 1 | 1 | 12 | 4 | 9 | 39 | 12 | 151 |

| Species | AL | CA | HO | BA | HA | CE | PG | CT | KE | CN | DO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Belted Kingfisher | 3 | 17 | 25 | 9 | 5 | | 14 | 8 | 5 | 9 | 12 | 107 |
| Red-headed Woodpecker | | 3 | 8 | | 3 | | 1 | 31 | | | 13 | 59 |
| Red-bellied Woodpecker | 14 | 66 | 210 | 31 | 21 | | 87 | 45 | 28 | 65 | 23 | 590 |
| Yellow-bellied Sapsucker | | | 1 | | | | | 1 | | 2 | | 4 |
| Downy Woodpecker | 15 | 50 | 116 | 24 | 9 | 1 | 72 | 41 | 7 | 39 | 59 | 433 |
| Hairy Woodpecker | | 6 | 28 | 2 | | | 7 | 7 | 5 | 6 | 4 | 65 |
| Downy/Hairy Woodpecker sp. | | | | | | | 1 | | | | | 1 |
| Northern Flicker | 15 | 31 | 111 | 66 | 7 | 26 | 41 | 31 | 37 | 32 | 78 | 475 |
| Pileated Woodpecker | 9 | 16 | 35 | 2 | 5 | 3 | 12 | 23 | 9 | 31 | 14 | 159 |
| American Kestrel | | 10 | 17 | 4 | 8 | | 10 | | 10 | 15 | 32 | 106 |
| Merlin | | | | 2 | | | 1 | | | 2 | 3 | 8 |
| Eastern Wood-Pewee | 4 | 23 | 56 | 18 | 11 | 1 | 19 | 12 | 9 | 12 | 20 | 185 |
| Yellow-bellied Flycatcher | | | | | 1 | | | | | | | 1 |
| Acadian Flycatcher | | 1 | | | 1 | | 3 | 3 | | 2 | 2 | 12 |
| Willow Flycatcher | | 2 | | | | | | | | | | 2 |
| Least Flycatcher | | | | 1 | | | | | | | 1 | 2 |
| unidentified *Empidonax* sp. | | | 15 | 1 | 1 | | 4 | 1 | | 2 | 3 | 27 |
| Eastern Phoebe | 20 | 22 | 53 | 10 | 6 | 1 | 44 | 10 | 2 | 17 | 1 | 186 |
| Great Crested Flycatcher | | | 4 | 5 | | | 1 | | | 3 | 1 | 14 |
| Eastern Kingbird | 2 | 1 | | | | | 2 | | 4 | 2 | 4 | 15 |
| White-eyed Vireo | | 1 | 12 | 2 | 1 | | 29 | 9 | 1 | 7 | 4 | 66 |
| Yellow-throated Vireo | | | 3 | | | | | 1 | | | | 4 |
| Warbling Vireo | | 1 | 1 | 2 | | | 1 | 1 | | | | 6 |
| Philadelphia Vireo | 1 | | 1 | 4 | | | 1 | 1 | | | | 8 |
| Red-eyed Vireo | 4 | 11 | 42 | 18 | 2 | 1 | 36 | 23 | 3 | 14 | 29 | 183 |
| Blue Jay | 48 | 237 | 851 | 227 | 42 | 400 | 219 | 77 | 250 | 200 | 115 | 2666 |
| American Crow | 288 | 267 | 461 | 37 | 35 | 6 | 156 | 174 | 32 | 145 | 110 | 1711 |
| Fish Crow | 2 | 8 | 8 | 18 | 3 | | 63 | 19 | 3 | 194 | 5 | 323 |
| unidentified crow sp. | | | 240 | 43 | | | 172 | 1 | 9 | 1 | 10 | 476 |
| Common Raven | 17 | 3 | 3 | | | | 1 | | | | | 24 |
| Horned Lark | | | 30 | | | | | | | 96 | 3 | 129 |
| Tree Swallow | | | | 18 | | 13 | 12 | | 741 | 1819 | 823 | 3426 |
| N. Rough-winged Swallow | | | | | | | | | 7 | | | 7 |
| Barn Swallow | | | | 1 | | | 1 | | | 10 | 6 | 18 |
| Carolina Chickadee | | 155 | 311 | 62 | 27 | 3 | 132 | 97 | 32 | 133 | 225 | 1177 |
| Black-capped Chickadee | 35 | | | | | | | | | | | 35 |
| Tufted Titmouse | 30 | 104 | 218 | 48 | 13 | | 101 | 100 | 14 | 94 | 83 | 805 |
| Red-breasted Nuthatch | 2 | | 1 | | | 1 | | | | | 2 | 6 |
| White-breasted Nuthatch | 30 | 47 | 125 | 15 | 9 | | 37 | 23 | 2 | 15 | 3 | 306 |
| Brown-headed Nuthatch | | | | | | | | 5 | 7 | | 178 | 190 |
| Brown Creeper | | | 1 | | | | | 1 | | | | 2 |
| House Wren | 4 | 5 | 29 | 18 | 2 | 2 | 11 | 2 | 8 | 2 | 20 | 103 |
| Marsh Wren | | | | 2 | | | | | | | 2 | 4 |
| Carolina Wren | 16 | 73 | 242 | 55 | 12 | 2 | 118 | 62 | 36 | 99 | 81 | 796 |
| Blue-gray Gnatcatcher | 1 | 2 | 3 | 5 | | 1 | 2 | 1 | 4 | 3 | 22 | 44 |
| Ruby-crowned Kinglet | | 2 | | | 1 | | 1 | | | | 2 | 6 |
| Eastern Bluebird | 62 | 99 | 281 | 23 | 20 | 1 | 65 | 49 | 90 | | 138 | 828 |
| Veery | | | | | 1 | | 4 | 1 | | 115 | 4 | 125 |
| Gray-cheeked Thrush | | | 1 | | | | 1 | 2 | | | | 4 |
| Swainson's Thrush | | 1 | 1 | 2 | 1 | | 2 | | | | | 7 |
| Hermit Thrush | 1 | 2 | 1 | | | | | | | 5 | | 9 |
| unidentified *Catharus* thrush sp. | | | | | | | 1 | | | | | 1 |
| Wood Thrush | | 6 | 22 | 1 | | | 5 | 2 | | | | 36 |

| Species | AL | CA | HO | BA | HA | CE | PG | CT | KE | CN | DO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| American Robin | 27 | 74 | 358 | 195 | 19 | | 227 | 9 | 23 | 456 | 156 | 1544 |
| Gray Catbird | 27 | 192 | 364 | 107 | 21 | 2 | 139 | 7 | 37 | 17 | 47 | 960 |
| Brown Thrasher | | 2 | 19 | 13 | 1 | | 21 | 11 | 11 | 10 | 12 | 100 |
| Northern Mockingbird | 3 | 26 | 124 | 24 | 7 | 1 | 76 | 17 | 99 | 94 | 54 | 525 |
| European Starling | 319 | 581 | 1187 | 247 | 24 | 1 | 533 | 124 | 813 | 1248 | 1340 | 6417 |
| Cedar Waxwing | 76 | 17 | 145 | 87 | 42 | 11 | 71 | 4 | 7 | 159 | 23 | 642 |
| Ovenbird | 2 | 7 | 3 | 5 | 2 | | 6 | | | 2 | 9 | 36 |
| Worm-eating Warbler | | 1 | | | | | | | | | | 1 |
| Northern Waterthrush | | | | 1 | | | | | | | 1 | 2 |
| Blue-winged Warbler | | | 1 | 1 | | | | | | | | 2 |
| Black-and-white Warbler | | 5 | 23 | 7 | 3 | | 17 | 23 | 7 | 37 | 54 | 176 |
| Prothonotary Warbler | | | 1 | | | | | | | | | 1 |
| Tennessee Warbler | 4 | | | | | | 3 | 1 | | | 2 | 10 |
| Nashville Warbler | | | | 1 | 1 | | 1 | 2 | 1 | 1 | | 7 |
| Connecticut Warbler | | | 1 | 1 | | | | 1 | | 1 | | 4 |
| Common Yellowthroat | | 6 | 94 | 30 | 9 | | 39 | 21 | 15 | 20 | 50 | 284 |
| Hooded Warbler | 2 | | | | | | 1 | | | | | 3 |
| American Redstart | | 9 | 32 | 17 | 2 | | 22 | 13 | 2 | 56 | 77 | 230 |
| Cape May Warbler | 10 | 1 | 7 | 4 | | | 3 | 1 | | 1 | | 27 |
| Northern Parula | 2 | 3 | 9 | 5 | | | 8 | 6 | | 21 | 29 | 83 |
| Magnolia Warbler | 2 | 10 | 38 | 31 | 3 | 1 | 43 | 2 | 1 | 4 | 15 | 150 |
| Bay-breasted Warbler | 2 | 1 | 1 | | | | 1 | | | 1 | 1 | 7 |
| Blackburnian Warbler | 2 | 1 | 2 | 2 | 1 | | | 2 | | 2 | 1 | 13 |
| Yellow Warbler | | | 1 | 3 | | | | 1 | 2 | 1 | 3 | 11 |
| Chestnut-sided Warbler | | 2 | 12 | 8 | | | 8 | | | 2 | 1 | 33 |
| Blackpoll Warbler | 2 | | | | | | | 1 | | | | 3 |
| Black-throated Blue Warbler | 2 | 12 | 13 | | | | 10 | 4 | | 7 | 2 | 50 |
| Palm Warbler | 1 | 3 | 10 | 14 | | | 7 | | | 7 | 6 | 48 |
| Pine Warbler | 5 | 1 | 1 | 4 | | | 8 | 9 | 4 | 8 | 124 | 164 |
| Yellow-rumped Warbler (Myrtle) | | 7 | 2 | | | | 3 | 1 | | 13 | | 26 |
| Yellow-throated Warbler | | | 1 | | | | | 1 | | | 3 | 5 |
| Prairie Warbler | | | 1 | 1 | | | 1 | | | 1 | 3 | 7 |
| Black-throated Green Warbler | 8 | 6 | 28 | 6 | 4 | 1 | 4 | 3 | | 6 | 7 | 73 |
| Canada Warbler | | | 1 | | | | | | | | | 1 |
| Yellow-breasted Chat | 1 | | 1 | 1 | | | 1 | | | 2 | | 6 |
| unidentified warbler sp. | 38 | | 11 | 6 | | | 6 | | | | 20 | 81 |
| Eastern Towhee | 6 | 8 | 81 | 3 | 4 | | 12 | 1 | 4 | 3 | 3 | 125 |
| Chipping Sparrow | 152 | 25 | 165 | 27 | 37 | | 71 | 12 | 7 | 71 | 109 | 676 |
| Field Sparrow | 4 | 4 | 4 | | | | | 1 | | 11 | 2 | 26 |
| Vesper Sparrow | | 1 | | | | | | | | | | 1 |
| Savannah Sparrow | | | 15 | | | | 10 | | | | 1 | 26 |
| Grasshopper Sparrow | | | 5 | | | | | | | 1 | | 6 |
| Seaside Sparrow | | | | | | | | | | | 4 | 4 |
| Song Sparrow | 31 | 16 | 57 | 13 | 3 | | 18 | | | 7 | 1 | 146 |
| Lincoln's Sparrow | | | 2 | 1 | | | | | | | | 3 |
| Swamp Sparrow | | 1 | | | | | | | | | 1 | 2 |
| Summer Tanager | | | | | | | 3 | 6 | 1 | 2 | 7 | 19 |
| Scarlet Tanager | 4 | 7 | 15 | 4 | | | 13 | 7 | | 1 | 7 | 58 |
| Northern Cardinal | 44 | 127 | 427 | 84 | 23 | 7 | 143 | 85 | 109 | 129 | 82 | 1260 |
| Rose-breasted Grosbeak | | 8 | 12 | 12 | 2 | 15 | 10 | 4 | | | 1 | 64 |
| Blue Grosbeak | | | 13 | 2 | | | 12 | | 11 | 25 | 28 | 91 |
| Indigo Bunting | 2 | 7 | 63 | 9 | 3 | | 22 | 10 | 6 | 12 | 16 | 150 |
| Bobolink | | | 50 | 6 | | | | | 15 | 11 | 128 | 210 |

| Species | AL | CA | HO | BA | HA | CE | PG | CT | KE | CN | DO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Red-winged Blackbird | | 13 | 101 | 29 | 90 | | 127 | 13 | 86 | 139 | 1448 | 2046 |
| Eastern Meadowlark | 1 | | 13 | | | | | | 3 | 3 | | 20 |
| Common Grackle | | 200 | 131 | 91 | 20 | | 931 | 31 | 230 | 832 | 1653 | 4119 |
| Brown-headed Cowbird | | 7 | 121 | 17 | 20 | | 100 | 1 | 161 | 548 | 345 | 1320 |
| unidentified blackbird sp. | 150 | | | | | | 6 | | | 100 | | 256 |
| Orchard Oriole | | | | | | | | | | 2 | | 2 |
| Baltimore Oriole | | | 2 | 1 | | | | | 4 | | 3 | 10 |
| House Finch | 87 | 39 | 195 | 46 | 10 | | 52 | 6 | 2 | 39 | 12 | 488 |
| Purple Finch | 2 | | | 2 | | | | | | | | 4 |
| American Goldfinch | 145 | 122 | 392 | 60 | 32 | 2 | 66 | 47 | 24 | 65 | 71 | 1026 |
| House Sparrow | 195 | 107 | 296 | 113 | 8 | | 61 | 35 | 75 | 202 | 13 | 1105 |

*[Editor's Note: If your county does not conduct an annual Maryland Fall Count, please consider starting one. Contact Chuck Stirrat at Stirrbird@outlook.com for additional information.]*

*Maryland Birdlife* 64(2):53

## 2013 Maryland Fall Count: Corrigendum

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In Table 3 of the 2013 Maryland Fall Count article (Stirrat 2015), the 68 **Boat-tailed Grackles** shown for Caroline County should be 68 Common Grackles. Hence, the total for Boat-tailed Grackles should be 4, and for Common Grackles should be 2648. The corrected data lines for Table 3 should read as follows:

| Species | AL | WA | CA | HO | BA | CE | PG | AA | CT | CN | DO | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Common Grackle | 1 | 2 | 185 | 416 | 4 | | 740 | 1 | 3 | 68 | 1228 | 2648 |
| Boat-tailed Grackle | | | | | | | | | | | 4 | 4 |

## LITERATURE CITED

Stirrat, C.R. 2015. 2013 Maryland Fall Count. *Maryland Birdlife* 64(1):67-72.

*Maryland Birdlife* 64(2):54-64

# Maryland Christmas Bird Counts (115th CBC) December 2014 through January 2015

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Maryland had a brand new count this year (Middle River) compiled by Kevin Graff and Pete Webb and the Loch Raven Reservoir count is no longer being run (Table 1).

Low temperatures averaged 29.8 °F (-1.2 °C) across all Maryland counts (n = 24), and highs averaged 47.3 °F (8.5 °C) (Table 2). There was a minimum low of 19 °F (-7.2 °C) (Oakland), maximum low of 46 °F (7.8 °C) (Ocean City), minimum high of 28 °F (-2.2 °C) (Oakland), and a maximum high of 64 °F (17.8 °C) at Annapolis-Gibson Island. No counts had any snow on the ground but Annapolis-Gibson Island, Patuxent River, and Sugarloaf Mountain encountered some light rain.

Five counts had highs of Pileated Woodpeckers (Table 3). Four counts had highs of Bald Eagles consistent with the recovery of the species. There were also high counts of Merlin, Yellow-bellied Sapsucker, Hermit Thrush, and Ruddy Duck (four counts reporting highs of each of those species).

Major highlights this year included a **Summer Tanager** at Seneca, **Ash-throated Flycatcher** at Catoctin Mountain, **Say's Phoebe** at Chesterville, and a **Vermillion Flycatcher** on the Crisfield count. Other good birds included **Yellow-headed Blackbird** on the Lower Kent count, a **Northern Goshawk** at Crisfield, 11 **Evening Grosbeaks** at Chesterville, and a **shrike** sp. at Sugarloaf with the observers leaning towards Loggerhead Shrike but uncomfortable going beyond shrike sp.

There were **Greater White-fronted Geese** at Oakland (2), and Rock Run (count week), and a nice sketch of a Canada Goose x Greater White-fronted hybrid on the Chesterville count. The Allegany count had 2 **Ross's Geese** (1st occurrence); Chesterville had 5 and Ocean City had 3. The Allegany Count had a **Trumpeter Swan** that has been on the Potomac River in Cumberland since June. Point Lookout had a **Barrow's Goldeneye** again (multiple observers). The Patuxent River Count had a **Red-necked Grebe**.

Crisfield had 4 **American White Pelicans** and South Dorchester had 23. Annapolis-Gibson Island had 6 **Brown Pelicans**. Middle River had a **Sandhill Crane** and Bowie had 3 (high count & 5th occurrence). Lower Kent had a **Franklin's Gull** that was around for an extended stay at the Chestertown Wastewater Treatment Plant. Ocean City had 7 **Dovekie**.

Annapolis-Gibson Island had a **Common Raven** (1st occurrence). Sugarloaf had a **Blue-headed Vireo**. Seneca had a **Summer Tanager** (count week). Triadelphia had a **Lincoln's Sparrow** (9th occurrence).

**Table 1. 2014-2015 Maryland Christmas Bird Counts: abbreviations, survey dates, and compilers.**

| Christmas Bird Count | Abbreviation | Survey Date | Compiler |
|---|---|---|---|
| Allegany County | MDAC | 20 DEC 2014 | J.B. Churchill |
| Annapolis-Gibson Island | MDAG | 4 JAN 2015 | Lynn Davidson |
| | | | Sue Ricciardi |
| | | | Hal Wierenga |
| Bowie | MDBO | 1 JAN 2015 | David Mozurkewich |
| Catoctin Mountain | MDCM | 14 DEC 2014 | Mike Welch |
| Chesterville | MDCV | 21 DEC 2014 | Maren Gimpel |
| Crisfield | MDCR | 27 DEC 2014 | Paul Bystrak |
| Denton | MDDE | 20 DEC 2014 | Steve Westre |
| Elkton | MDEL | 14 DEC 2014 | Laura Balascio |
| Jug Bay | MDJB | 14 DEC 2014 | Sam Droege |
| Lower Kent County | MDLK | 14 DEC 2014 | Nancy Martin |
| Middle River | MDMR | 20 DEC 2014 | Kevin Graff |
| | | | Pete Webb |
| Oakland | MDOA | 20 DEC 2014 | Connie Skipper |
| Ocean City | MDOC | 28 DEC 2014 | Mark Hoffman |
| Patuxent River | MDPR | 28 DEC 2014 | Andy Brown |
| Point Lookout | MDPL | 21 DEC 2014 | Bob Boxwell |
| Port Tobacco | MDPT | 14 DEC 2014 | Gwen Brewer |
| Rock Run | MDRR | 27 DEC 2014 | Rick Cheicante |
| St. Michaels | MDST | 14 DEC 2014 | Wayne Bell |
| Salisbury | MDSA | 14 DEC 2014 | Mike Walsh |
| Seneca | MDSE | 14 DEC 2014 | Jim Nelson |
| Southern Dorchester County | MDSD | 21 DEC 2014 | Bruce Peterjohn |
| Sugarloaf Mountain | MDSM | 28 DEC 2014 | Janet Millenson |
| Triadelphia Reservoir | MDTR | 20 DEC 2014 | David Holmes |
| Washington County | MDWC | 27 DEC 2014 | Mark Abdy |

## Table 2. 2014-2015 Maryland Christmas Bird Counts: weather data.

| Christmas Bird Count | Temperature Low (°F) | Temperature High (°F) | Wind Direction | Wind Speed Min (mph) | Wind Speed Max (mph) | Snow Depth Min (inches) | Snow Depth Max (inches) | Ice Cover Still | Ice Cover Moving | AM Rain | AM Snow | AM Clouds | PM Rain | PM Snow | PM Clouds |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Allegany County | 21 | 38 | Var | 0 | 5 | 0 | 0 | Partly Frozen | Open | None | None | Partly Cloudy | None | None | Partly Cloudy |
| Annapolis-Gibson Island | 38 | 64 | SW | 5 | 15 | | | Open | Open | Light | None | Cloudy | None | None | Cloudy |
| Bowie | 19 | 45 | SW | 0 | 10 | 0 | 0 | Frozen | Partly Frozen | None | None | Partly Cloudy | None | None | Partly Cloudy |
| Catoctin Mountain | 28 | 48 | Unk. | 0 | 10 | 0 | 0 | Open | Open | None | None | Partly Clear | None | None | Partly Clear |
| Chesterville | 30 | 45 | NW | 0 | 7 | | | Partly Frozen | Open | None | None | Cloudy | None | None | Clear |
| Crisfield | 30 | 61 | SW | 0 | 14 | 0 | 0 | Open | Open | None | None | Clear | None | None | Partly Cloudy |
| Denton | 22 | 37 | Calm | | | | | Partly Frozen | Open | None | None | Partly Cloudy | None | None | Unk. |
| Elkton | 33 | 42 | Calm | 0 | 5 | 0 | 0 | Open | Open | None | None | Cloudy | None | None | Cloudy |
| Jug Bay | 36 | 53 | NW | 0 | 7 | 0 | 0 | Open | Open | None | None | Partly Cloudy | None | None | Cloudy |
| Lower Kent County | 32 | 46 | Var. | 0 | 10 | 0 | | Open | Open | None | None | Cloudy | None | None | Cloudy |
| Middle River | 26 | 37 | NW | 0 | 4 | 0 | 0 | Partly Frozen | Open | None | None | Partly Clear | None | None | Partly Cloudy |
| Oakland | 19 | 28 | Calm | 0 | 5 | 0 | 0 | Partly Frozen | Open | None | None | Cloudy | None | None | Partly Cloudy |
| Ocean City | 46 | 57 | SW | 7 | 16 | | | Open | Open | None | None | Clear | None | None | Partly Cloudy |
| Patuxent River | 34 | 48 | NE | 0 | 5 | | | Open | Open | None | None | Cloudy | Light | None | Cloudy |
| Point Lookout | 34 | 38 | Calm | 0 | 5 | 0 | 0 | Open | Open | | | | | | |
| Port Tobacco | 27 | 52 | Calm | 0 | 10 | | | Open | Open | None | None | Clear | None | None | Partly Cloudy |
| Rock Run | 30 | 52 | Calm | | | | | Open | Open | None | None | Clear | None | None | Clear |
| St. Michaels | 32 | 50 | Calm | 0 | 4 | 0 | 0 | Open | Open | None | None | Cloudy | None | None | Cloudy |
| Salisbury | 32 | 48 | Calm | 0 | 5 | 0 | 0 | Open | Open | None | None | Cloudy | None | None | Cloudy |
| Seneca | 32 | 53 | Unk. | 5 | 10 | 0 | 0 | Open | Open | None | None | Partly Cloudy | None | None | Partly Cloudy |
| Southern Dorchester County | 31 | 43 | N | 0 | 10 | 0 | 0 | Open | Open | None | None | Partly Cloudy | None | None | Clear |
| Sugarloaf Mountain | 37 | 58 | Unk. | 0 | 5 | | | Open | Open | Light | None | Partly Cloudy | Light | None | Cloudy |
| Triadelphia Reservoir | 19 | 37 | W | 0 | 5 | 0 | 0 | Partly Open | Open | None | None | Partly Clear | None | None | Partly Cloudy |
| Washington County | 30 | 60 | Unk. | 0 | 2 | 0 | 0 | Open | Open | None | None | Clear | None | None | Clear |

**Table 3. 2014-2015 Maryland Christmas Bird Counts: inland counts.**
(bolded species name = unusual for the count; bolded data value = high count record; cw = observed during count week)

| Species | Oakland | Allegany County | Washington County | Catoctin Mountain | Sugarloaf Mountain | Seneca | Triadelphia Reservoir | Rock Run | Bowie | Elkton | Chesterville |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Greater White-fronted Goose** | 2 | | | | | | | cw | | | |
| Greater White-fronted Goose x Canada Goose (hybrid) | | | | | | | | | | | 1 |
| Snow Goose | | | | | 1 | | | | | 122 | |
| Snow Goose (white form) | | | | | | | | | | | 29612 |
| Snow Goose (blue form) | | | | | | | | | | | **288** |
| Ross's Goose | | 2 | | | | | | | | | **5** |
| Brant (American) | | | | | | | | | | | |
| Cackling Goose | | | | | **6** | 2 | 4 | 2 | 4 | | 6 |
| Canada Goose | **2420** | 691 | 471 | 753 | 4834 | 2851 | 6586 | 6888 | 10849 | 4825 | 17862 |
| Mute Swan | | | | | | 0 | | | | | 1 |
| Trumpeter Swan | | 1 | | | | | | | | | |
| Tundra Swan | 0 | 1 | | | | | | 1813 | 1 | 34 | 53 |
| Wood Duck | | | 5 | | | 2 | 1 | | 7 | 6 | 3 |
| Gadwall | 62 | | | | 42 | 5 | 2 | 25 | 35 | 2 | 436 |
| Eurasian Wigeon | | | | | | | | | | | |
| American Wigeon | 9 | 2 | 3 | | 1 | 66 | | 1 | 11 | | 8 |
| American Black Duck | 50 | 11 | 7 | 8 | 57 | 82 | 91 | 49 | 30 | 143 | 239 |
| American Black Duck or Mallard (unidentified) | | | | | | | | | | | |
| American Black Duck x Mallard (hybrid) | 2 | | | | | | | | | | 2 |
| Mallard | 1422 | 349 | 292 | 112 | 160 | 931 | 258 | 378 | 534 | 299 | 1554 |
| Blue-winged Teal | | | | | | | | | | | |
| Northern Shoveler | 2 | | | | | 8 | | | 2 | | 0 |
| Northern Pintail | | | | | | | | | | 20 | **37** |
| Green-winged Teal (American) | 44 | 2 | | | | 2 | | | 9 | 6 | **92** |
| unidentified *Anas* sp. | | | | | 4 | | | | | | |
| Canvasback | 2 | | | | 2 | | | 6 | | | |
| Redhead | **249** | | | | 2 | 13 | | | | | 2 |
| Redhead x Lesser Scaup (hybrid) | 1 | | | | | | | | | | |
| Ring-necked Duck | 221 | 2 | **2** | | 40 | 757 | 71 | 4 | 141 | | 63 |
| Greater Scaup | 2 | | | | | | | | | | |
| Lesser Scaup | 41 | | | | | 3 | 1 | 7 | | | |
| unidentified scaup sp. | 1 | | | | | | | 15 | | | |
| Common Eider | | | | | | | | | | | |
| Harlequin Duck | | | | | | | | | | | |
| Surf Scoter | | | | | | | | | | | |
| White-winged Scoter | | | | | | | | 0 | | | |
| Black Scoter | | | | | | | | | | | |
| unidentified scoter sp. | | | | | | | | | | | |
| Long-tailed Duck | 1 | | | | | | 1 | | | | |
| Bufflehead | **100** | 6 | | | 23 | 270 | 5 | 91 | 2 | 49 | |
| Common Goldeneye | 6 | | | | | 1 | | 4 | | | |
| Barrow's Goldeneye | | | | | | | | | | | |
| Hooded Merganser | 123 | 28 | 6 | | 36 | 70 | 61 | 10 | 83 | 2 | 104 |
| Common Merganser | **30** | 3 | 17 | | 10 | 23 | 443 | 55 | 4 | 13 | **206** |
| Red-breasted Merganser | | | | | | 1 | | 1 | | | |
| Ruddy Duck | **2554** | | | | 4 | 6 | 8 | **561** | 23 | | **22** |
| Northern Bobwhite | | | | | | | | | | | **67** |
| Ring-necked Pheasant | | | 1 | | | | | | | | |
| Wild Turkey | 16 | 19 | 53 | | 19 | 2 | 9 | 8 | 14 | | 2 |
| Red-throated Loon | | | | | | | | | | | |
| Common Loon | **24** | 1 | | | | | 1 | | | 2 | |
| Pied-billed Grebe | 23 | 2 | 1 | | 5 | 17 | 9 | 24 | 10 | 3 | |

| Species | Oakland | Allegany County | Washington County | Catoctin Mountain | Sugarloaf Mountain | Seneca | Triadelphia Reservoir | Rock Run | Bowie | Elkton | Chesterville |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Horned Grebe | **53** | 1 | | | | 3 | 1 | | | 2 | |
| Red-necked Grebe | | | | | | | | | | | |
| Northern Gannet | | | | | | | | | | | |
| Double-crested Cormorant | | | | | 1 | | | 8 | | 11 | |
| Great Cormorant | | | | | | | | | | | |
| unidentified cormorant sp. | | | | | | | | | | | |
| **American White Pelican** | | | | | | | | | | | |
| Brown Pelican | | | | | | | | | | | |
| American Bittern | | | | | | | | | | | |
| Great Blue Heron (blue form) | 1 | 6 | 6 | 9 | 32 | 61 | 14 | 107 | 12 | 44 | 54 |
| Great Egret | | | | | | | | | | | |
| Cattle Egret | | | | | | | | | | | |
| Black-crowned Night-Heron | | | | | | | | 8 | | | |
| Black Vulture | | | 25 | 16 | 110 | 304 | 225 | 299 | **331** | 85 | 67 |
| Turkey Vulture | 2 | | 57 | 36 | 270 | 421 | 193 | 189 | 232 | 130 | 337 |
| unidentified vulture sp. | | | | | | 75 | | | | | |
| Osprey | | | | | | | | | | | |
| Bald Eagle | **10** | | 1 | 3 | 7 | 13 | **49** | 92 | 41 | 23 | **91** |
| Northern Harrier | 0 | | | 2 | 3 | 3 | 1 | 5 | | 6 | 14 |
| Sharp-shinned Hawk | 1 | 2 | 3 | 3 | 5 | 8 | 8 | 6 | 10 | 5 | 6 |
| Cooper's Hawk | 2 | 4 | 6 | 3 | 8 | 5 | **13** | 3 | 10 | 3 | 10 |
| **Northern Goshawk** | | | | | | | | | | | |
| unidentified accipiter sp. | | 1 | | | | | | | | | |
| Red-shouldered Hawk | 3 | 1 | 11 | 15 | 59 | 53 | 61 | 20 | 57 | 10 | 11 |
| Red-tailed Hawk | **22** | 13 | 35 | 36 | 53 | 37 | 42 | 37 | 51 | 9 | 70 |
| unidentified buteo sp. | | | | | | 1 | | | | | |
| Golden Eagle | | | | | | | | | | | |
| Clapper Rail | | | | | | | | | | | |
| King Rail | | | | | | | | | | | |
| large rail sp. | | | | | | | | | | | |
| Virginia Rail | | | | | | | | **2** | | | 1 |
| Sora | | | | | | | | | | | |
| Common Gallinule | | | | | | | | | | | |
| American Coot | 39 | 14 | 1 | | 2 | 183 | | 179 | 13 | 57 | |
| Sandhill Crane | | | | | | | | | **3** | | |
| American Oystercatcher | | | | | | | | | | | |
| Black-bellied Plover | | | | | | | | | | | |
| Killdeer | | 5 | | 4 | 4 | 4 | 22 | **84** | 56 | 1 | 31 |
| Greater Yellowlegs | | | | | | | | | | | |
| Willet | | | | | | | | | | | |
| Lesser Yellowlegs | | | | | | | | | | | |
| Ruddy Turnstone | | | | | | | | | | | |
| Sanderling | | | | | | | | | | | |
| Dunlin | | | | | | | | 1 | | | |
| Purple Sandpiper | | | | | | | | | | | |
| Least Sandpiper | | | | | | | | | | | |
| Long-billed Dowitcher | | | | | | | | | | | |
| Wilson's Snipe | 1 | | | 6 | | | | | 19 | | 2 |
| American Woodcock | | | | | | | | | 1 | 1 | 2 |
| Dovekie | | | | | | | | | | | |
| Bonaparte's Gull | | | | | | | | 37 | | | 0 |
| Laughing Gull | | | | | | | | | | 1 | |
| **Franklin's Gull** | | | | | | | | | | | |
| Ring-billed Gull | 42 | **20** | | | 1678 | 759 | 68 | 4605 | 694 | 1501 | 499 |
| Herring Gull | | | | | 3 | 21 | | 170 | 18 | 225 | 2 |
| Iceland Gull | | | | | | 0 | | | | | |
| Lesser Black-backed Gull | | | | | | | | | | | |
| Great Black-backed Gull | | | | | | 0 | | 101 | 1 | 63 | 1 |
| unidentified large gull sp. | | | | | | | | | 22 | | |
| unidentified gull sp. | | | | | 25 | 61 | 2 | 91 | | 171 | |

| Species | Oakland | Allegany County | Washington County | Catoctin Mountain | Sugarloaf Mountain | Seneca | Triadelphia Reservoir | Rock Run | Bowie | Elkton | Chesterville |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Forster's Tern | | | | | | | | | | | |
| Black Skimmer | | | | | | | | | | | |
| Rock Pigeon | 45 | 314 | 463 | 358 | 329 | 501 | 739 | 464 | 995 | 32 | 238 |
| Mourning Dove | 66 | 98 | 386 | 343 | 466 | 419 | 447 | 172 | 775 | 50 | 421 |
| Barn Owl | | | | | | | | | | | |
| Eastern Screech-Owl | 2 | 3 | 3 | | 2 | | | 4 | 2 | 18 | **36** |
| Great Horned Owl | 0 | | 4 | 2 | 1 | 1 | 3 | 10 | 6 | 8 | 38 |
| Barred Owl | **5** | | | 2 | 2 | 5 | 3 | 3 | 16 | 2 | 15 |
| Short-eared Owl | | | | | | | 1 | | | | |
| Northern Saw-whet Owl | | | | | | | 0 | | | | |
| Belted Kingfisher | 3 | 2 | 11 | 8 | 25 | 23 | 25 | 24 | 18 | 9 | 13 |
| Red-headed Woodpecker | | | | 8 | | 12 | | | | | |
| Red-bellied Woodpecker | **19** | 62 | 99 | 107 | 286 | 405 | 230 | 93 | 303 | 85 | 158 |
| Yellow-bellied Sapsucker | | 9 | 9 | **16** | 53 | 94 | 31 | 17 | 68 | 12 | 37 |
| Downy Woodpecker | 36 | 61 | 53 | 85 | 258 | 344 | 167 | 59 | 226 | 68 | 88 |
| Hairy Woodpecker | 20 | 17 | 8 | 7 | 40 | 53 | 24 | 12 | 46 | 14 | 29 |
| Northern Flicker (Yellow-shafted) | | 23 | 17 | 55 | 197 | 215 | 131 | 52 | 313 | 97 | 99 |
| Pileated Woodpecker | **15** | 36 | 29 | 6 | **96** | 104 | 62 | 19 | 88 | **18** | 11 |
| American Kestrel | | 1 | 3 | 24 | 13 | 1 | 3 | 2 | 5 | | 13 |
| Merlin | | | | | 2 | 1 | **2** | 1 | | | |
| Peregrine Falcon | | 1 | | | 2 | 2 | | | | | |
| Eastern Phoebe | | | | 2 | 3 | 6 | | 1 | 9 | 1 | 2 |
| **Say's Phoebe** | | | | | | | | | | | 1 |
| **Vermilion Flycatcher** | | | | | | | | | | | |
| **Ash-throated Flycatcher** | | | | 1 | | | | | | | |
| **shrike sp.** | | | | | 1 | | | | | | |
| **Blue-headed Vireo** | | | | | 1 | | | | | | |
| Blue Jay | 98 | 185 | 228 | 188 | 624 | 555 | 681 | 180 | 589 | 299 | 318 |
| American Crow | 1242 | 201 | 340 | 268 | 1465 | 2246 | 1403 | 429 | 8928 | 301 | 174 |
| Fish Crow | | | 1 | | 215 | **752** | 276 | 16 | **954** | 38 | 2 |
| unidentified crow sp. | | | | | 831 | 2130 | 1357 | 19 | 2368 | | 12 |
| Common Raven | 14 | **20** | 6 | 27 | 13 | 9 | **6** | 3 | **4** | | |
| Horned Lark | | | | 386 | 158 | 13 | | 13 | 1 | | 350 |
| Tree Swallow | | | | | | | | | | | |
| Carolina Chickadee | | | 323 | 168 | 693 | 917 | 444 | 269 | 656 | 205 | 206 |
| Black-capped Chickadee | 205 | 126 | | | | | | | | | |
| Tufted Titmouse | 77 | 134 | 135 | 85 | 373 | 495 | 336 | 155 | 468 | 160 | 133 |
| Red-breasted Nuthatch | 7 | | | | 4 | 5 | 1 | 1 | 9 | 4 | 6 |
| White-breasted Nuthatch | 67 | 133 | 87 | 66 | 221 | 326 | 172 | 120 | 184 | 78 | 64 |
| Brown-headed Nuthatch | | | | | | | | | | | |
| Brown Creeper | 9 | 7 | 11 | 22 | 39 | 79 | 15 | 16 | 32 | 4 | **26** |
| House Wren | | | | | | 2 | **3** | 1 | **3** | | **2** |
| Winter Wren | 1 | 8 | 2 | 13 | 52 | 67 | 36 | 14 | 89 | 9 | 22 |
| Sedge Wren | | | | | | | | | | | |
| Marsh Wren | | | | | | | | | | | |
| Carolina Wren | 5 | 84 | 131 | 105 | 448 | 485 | 254 | 138 | 386 | 127 | **220** |
| Golden-crowned Kinglet | 7 | 1 | 12 | 8 | 60 | 227 | 34 | 22 | 61 | 3 | 24 |
| Ruby-crowned Kinglet | | 1 | | 5 | 13 | 98 | 7 | 8 | 15 | 4 | 15 |
| Eastern Bluebird | 2 | 128 | 155 | 120 | 394 | 593 | 258 | 144 | 340 | 88 | 211 |
| Hermit Thrush | | 16 | | 3 | **30** | 14 | 28 | 11 | 107 | 12 | **45** |
| American Robin | 2 | 35 | 433 | 147 | 298 | 829 | **11921** | 384 | 8453 | **712** | 352 |
| Gray Catbird | | 2 | | | 1 | 1 | 3 | 1 | 10 | 5 | **6** |
| Brown Thrasher | 1 | | | | | | 2 | | 9 | 2 | **11** |
| Northern Mockingbird | | 42 | 76 | 78 | 140 | 102 | 154 | 70 | 168 | 92 | 127 |
| European Starling | 680 | 1056 | 4730 | 2365 | 4439 | 2669 | 7016 | 1668 | 2931 | 1292 | 3405 |
| American Pipit | | | | 44 | 48 | 1 | | | 52 | | 103 |
| Cedar Waxwing | | 2 | 61 | 125 | 244 | 865 | 44 | 80 | 22 | 56 | 87 |
| Lapland Longspur | | | | 1 | 2 | | | | | | |
| Snow Bunting | | | | | | | | | | | 0 |
| Orange-crowned Warbler | | | | | | | | | | | |

| Species | Oakland | Allegany County | Washington County | Catoctin Mountain | Sugarloaf Mountain | Seneca | Triadelphia Reservoir | Rock Run | Bowie | Elkton | Chesterville |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Common Yellowthroat | | | | | 3 | | | | | | |
| Cape May Warbler | | | | | | | | | | | |
| Palm Warbler | | | | | | | | | | | |
| Pine Warbler | | | | | | | 1 | | | | |
| Yellow-rumped Warbler | | 17 | 14 | 21 | | 123 | | 3 | | 17 | |
| Yellow-rumped Warbler (Myrtle) | | | | | 37 | | 13 | | 59 | | 50 |
| Eastern Towhee | **2** | 3 | | 4 | 39 | 45 | 106 | 48 | 161 | 12 | 63 |
| American Tree Sparrow | 59 | 20 | 2 | 1 | 26 | 2 | 3 | 5 | 23 | | 1 |
| Chipping Sparrow | | | 4 | | 16 | 19 | 11 | 3 | 2 | | |
| Field Sparrow | | 9 | | 9 | 52 | 51 | 106 | 29 | 150 | 12 | 89 |
| Savannah Sparrow | | 1 | | | 2 | 12 | 4 | 23 | 45 | 15 | 52 |
| Savannah Sparrow (Ipswich) | | | | | | | | | | | |
| Nelson's Sparrow | | | | | | | | | | | |
| unidentified sharp-tailed sparrow sp. | | | | | | | | | | | |
| Seaside Sparrow | | | | | | | | | | | |
| Fox Sparrow | | | | | | 8 | 22 | 11 | 54 | 5 | 11 |
| Song Sparrow | **38** | 99 | 72 | 175 | 768 | 373 | 670 | 513 | 906 | 178 | **864** |
| Lincoln's Sparrow | | | | | | | 1 | | | | |
| Swamp Sparrow | 5 | 6 | | 13 | 74 | 31 | 35 | 32 | 200 | 24 | **102** |
| White-throated Sparrow | 3 | 169 | 169 | 235 | 1218 | 1338 | 1574 | 975 | 2829 | 754 | 1857 |
| White-crowned Sparrow | | 4 | 19 | 90 | 101 | 29 | 26 | 1 | 49 | 1 | 103 |
| Dark-eyed Junco | 163 | 427 | 315 | 553 | 1149 | 1308 | 1726 | 732 | 2447 | 645 | 1833 |
| Summer Tanager | | | | | | 0 | | | | | |
| Northern Cardinal | 37 | 125 | 231 | 212 | 543 | 596 | 518 | 233 | 749 | 236 | 448 |
| Red-winged Blackbird | | 15 | 12 | 22 | 330 | 339 | 445 | 1387 | 1063 | 5740 | 8241 |
| Eastern Meadowlark | | | | | 1 | | 1 | 3 | 15 | | |
| Yellow-headed Blackbird | | | | | | | | | | | |
| Rusty Blackbird | | 5 | | | | | | 5 | 24 | | |
| Common Grackle | | 1 | | 1 | 3 | 12 | 7 | 1718 | 192 | 2014 | 17086 |
| Boat-tailed Grackle | | | | | | | | | | | |
| Brown-headed Cowbird | | | | 6 | 50 | 209 | 504 | 92 | 50 | 16 | 220 |
| unidentified blackbird sp. | | | | | 30 | 248 | 2000 | 150000 | 37 | | 1130 |
| Baltimore Oriole | | | | | | | | | | | |
| House Finch | 37 | 9 | 105 | 82 | 164 | 220 | 173 | 94 | 248 | 107 | 74 |
| Purple Finch | | 2 | 9 | 6 | 16 | 17 | 7 | | 18 | 7 | 9 |
| Pine Siskin | 32 | | | 50 | 1 | 6 | 1 | 2 | 3 | | |
| American Goldfinch | 24 | 90 | 142 | 133 | 417 | 592 | 315 | 221 | 459 | 124 | 118 |
| Evening Grosbeak | | | | | | | | | | | 11 |
| House Sparrow | 72 | 40 | 192 | 256 | 268 | 123 | 223 | 232 | 506 | 243 | 178 |

**Table 4. 2014-2015 Maryland Christmas Bird Counts: tidewater counts.**
(bolded species name = unusual for the count; bolded data value = high count record; cw = observed during count week)

| Species | Annapolis-Gibson Island | Middle River | Patuxent River | Jug Bay | Port Tobacco | Point Lookout | Lower Kent County | Denton | St. Michaels | Southern Dorchester County | Crisfield | Salisbury | Ocean City |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Greater White-fronted Goose** | | | | | | | | | | | | | |
| Gr. White-fronted x Canada Goose (hybrid) | | | | | | | | | | | | | |
| Snow Goose | | | | | | | 8559 | 1095 | 2 | | | 70 | |
| Snow Goose (white form) | | | | | | | | 1095 | | 3700 | | | 29687 |
| Snow Goose (blue form) | | | | | | | 5 | | | 28 | | | 170 |
| Ross's Goose | | | | | | | | | | | | | 3 |
| Brant (American) | | | | | | | | | | | | | 969 |
| Cackling Goose | 1 | 1 | | | | | **23** | | | | | 1 | |
| Canada Goose | 6034 | 3786 | 9072 | 16604 | 3560 | 2090 | 70314 | 3038 | 43615 | 8888 | 1754 | **13963** | 12524 |
| Mute Swan | | 1 | | 1 | | | | | 1 | | | | |
| Trumpeter Swan | | | | | | | | | | | | | |
| Tundra Swan | 307 | 3 | 56 | 112 | 90 | 44 | 441 | 5 | 348 | 36 | 5 | 16 | 965 |
| Wood Duck | 3 | | 1 | | | | 6 | 10 | | 5 | 17 | 10 | 9 |
| Gadwall | 23 | 443 | 9 | 105 | 62 | 6 | 420 | | 10 | 22 | 8 | 3 | **407** |
| Eurasian Wigeon | | | | | | | **1** | | | | | | 1 |
| American Wigeon | 37 | 5 | | 4 | | | 342 | 1 | 1 | 81 | | | 229 |
| American Black Duck | 37 | 61 | 16 | 477 | 54 | 8 | 632 | 19 | 32 | 397 | 119 | 62 | 759 |
| Am. Black Duck or Mallard (unidentified) | | | | | | | | | | | | | 28 |
| American Black Duck x Mallard (hybrid) | | | | | | | **6** | | | | | | 2 |
| Mallard | 1545 | 876 | 188 | 806 | 167 | 29 | 9071 | 306 | 768 | 2098 | 172 | 227 | 3304 |
| Blue-winged Teal | | | | | | | | | | 54 | | | |
| Northern Shoveler | | 119 | | 47 | | | 228 | 4 | 21 | 91 | | | 193 |
| Northern Pintail | 1 | 4 | | 42 | 2 | | 166 | 4 | 0 | 89 | | | 118 |
| Green-winged Teal (American) | 1 | 6 | | 51 | | | 177 | 5 | 20 | 358 | 11 | 13 | 512 |
| *Anas* sp. | | | | | | | | | | | | | |
| Canvasback | 1933 | | 3 | 100 | | | 4420 | | 248 | 400 | 1322 | 170 | 24 |
| Redhead | 2 | 5 | | | | | 77 | | 1 | 402 | | 2 | 48 |
| Redhead x Lesser Scaup (hybrid) | | | | | | | | | | | | | |
| Ring-necked Duck | 17 | 20 | 120 | 38 | | | 440 | 2 | 1 | | 4 | 4 | 111 |
| Greater Scaup | 39 | | 3 | 150 | | | **18561** | | 0 | | | 1 | |
| Lesser Scaup | 1509 | 658 | 4 | cw | 4 | 70 | 39672 | 3 | 25 | 12 | 1 | | 53 |
| scaup sp. | 62 | | 38 | 1000 | | 782 | 30055 | 1 | 11 | | | 18 | |
| Common Eider | | | | | | | | | | | | | 29 |
| Harlequin Duck | | | | | | | | | | | | | 1 |
| Surf Scoter | 12 | | 73 | | | 228 | 9 | | 172 | 1 | 43 | | 401 |
| White-winged Scoter | 1 | | | | | 1 | 2 | | | | | | 20 |
| Black Scoter | 4 | | | | | 17 | 41 | | 0 | | | | 202 |
| scoter sp. | 10 | | | 25 | | 4 | | | 3475 | | | | 870 |
| Long-tailed Duck | 19 | | 66 | 146 | | 154 | 76 | | 1920 | | | | 33 |
| Bufflehead | 1287 | 280 | 436 | **1855** | 275 | 268 | 1405 | 9 | 2323 | 197 | 607 | 88 | 2834 |
| Common Goldeneye | 152 | 4 | 97 | 116 | | 377 | 461 | 3 | 510 | 37 | | 1 | |
| Barrow's Goldeneye | | | | | | 1 | | | | | | | |
| Hooded Merganser | 127 | 257 | 39 | 26 | 8 | 22 | 23 | **26** | 2 | 93 | 70 | 18 | 158 |
| Common Merganser | 20 | 62 | 1 | 41 | | 2 | 4 | 5 | | 3 | | | |
| Red-breasted Merganser | 3 | 9 | 3 | 0 | | 22 | 39 | 3 | 0 | 107 | 2 | 3 | 107 |
| Ruddy Duck | 2750 | 4627 | 3258 | **1822** | 1718 | 1556 | 13817 | 30 | 1867 | 1183 | 237 | 267 | 1038 |
| Northern Bobwhite | | | | | | 8 | | 3 | | | | | |
| Ring-necked Pheasant | | | | | | | 3 | | | | | | |
| Wild Turkey | 45 | 0 | | 29 | | 6 | 55 | **81** | 56 | 3 | | 2 | 3 |

| Species | Annapolis-Gibson Island | Middle River | Patuxent River | Jug Bay | Port Tobacco | Point Lookout | Lower Kent County | Denton | St. Michaels | Southern Dorchester County | Crisfield | Salisbury | Ocean City |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Red-throated Loon | 2 | | | | | | 11 | | | 1 | | | 160 |
| Common Loon | 8 | 2 | **70** | 2 | | 21 | 48 | | 26 | 8 | 7 | 3 | 158 |
| Pied-billed Grebe | 11 | 23 | | 8 | 5 | 3 | 2 | **4** | 0 | 3 | 3 | 3 | 14 |
| Horned Grebe | 7 | 6 | 21 | 18 | 7 | 33 | 11 | | 67 | 9 | 4 | | 187 |
| Red-necked Grebe | | | 1 | | | | | | | | | | |
| Northern Gannet | | | | | | | | | | | 13 | | 1323 |
| Double-crested Cormorant | 638 | 275 | 30 | 95 | 11 | 81 | **480** | 7 | 27 | | 2 | 83 | 93 |
| Great Cormorant | 7 | | | | | 1 | **5** | | | | | | 2 |
| cormorant sp. | 5 | | | | | | | | | | | | |
| **American White Pelican** | | | | | | | | | | 23 | 4 | | 6 |
| Brown Pelican | 6 | | | | | 63 | | | 1 | | | | |
| American Bittern | | | | | | | | | 0 | | 3 | | 1 |
| Great Blue Heron (blue form) | 94 | 68 | **39** | 45 | 17 | 16 | 73 | 18 | 27 | 78 | 89 | 37 | 87 |
| Great Egret | | | 1 | 1 | | | | | | | 1 | | 1 |
| Cattle Egret | 3 | | | | | | | | | | | | |
| Black-crowned Night-Heron | 1 | | | | | | | | 0 | 1 | 7 | | 10 |
| Black Vulture | 189 | 137 | 90 | **470** | 78 | 116 | 50 | 78 | 28 | 26 | **179** | 53 | 257 |
| Turkey Vulture | 177 | 99 | 95 | 197 | 131 | 118 | 216 | 282 | 258 | 337 | 931 | 478 | 581 |
| vulture sp. | | | | | | | | | | | | | |
| Osprey | 0 | | | | | | | | | | | | |
| Bald Eagle | 69 | 42 | **35** | 50 | 61 | 25 | 162 | 26 | 59 | 143 | 79 | 69 | 126 |
| Northern Harrier | | 8 | 3 | 17 | 5 | 6 | 21 | 5 | 4 | 52 | 33 | 17 | 23 |
| Sharp-shinned Hawk | 15 | 5 | 1 | 8 | 2 | | **20** | 4 | 18 | 9 | 9 | 6 | 25 |
| Cooper's Hawk | 13 | 15 | 3 | **12** | | | 11 | 9 | **14** | 6 | 12 | 10 | 16 |
| **Northern Goshawk** | | | | | | | | | | | 1 | | |
| accipiter sp. | 1 | | | | | | | | | | | | 2 |
| Red-shouldered Hawk | 35 | 21 | 21 | 29 | 13 | 11 | 7 | 12 | **14** | 4 | 9 | 13 | 13 |
| Red-tailed Hawk | 46 | 28 | 8 | 26 | 27 | 11 | 58 | 26 | 31 | 22 | 30 | 41 | 32 |
| buteo sp. | | | | | | | | | | | | | |
| Golden Eagle | | | | | | | 1 | | | 2 | | | |
| Clapper Rail | | | | | | 2 | | | | | 7 | 3 | 4 |
| King Rail | | | | | | | **3** | | | 1 | 1 | 1 | |
| large rail sp. | | | | | | | | | | 3 | 62 | | 1 |
| Virginia Rail | 1 | 2 | | 5 | | | 11 | | | 22 | 96 | 11 | 7 |
| Sora | | | | | | | | | | 1 | 1 | 1 | 0 |
| Common Gallinule | | | | | | | | | | 1 | | | |
| American Coot | 27 | 40 | 5 | 2 | | | 3 | 3 | 1 | 1 | | | 12 |
| Sandhill Crane | | 1 | | | | | | | | | | | |
| American Oystercatcher | | | | | | | | | | | | | 33 |
| Black-bellied Plover | | | | | | | | | | | | | 77 |
| Killdeer | 14 | 11 | 26 | 148 | 39 | 35 | 40 | 164 | 10 | 6 | 61 | 8 | 60 |
| Greater Yellowlegs | | | | | | | | | | 18 | 82 | 2 | 41 |
| Willet | | | | | | | | | | | | | 1 |
| Lesser Yellowlegs | | | | | | | | | | 1 | 2 | 2 | 2 |
| Ruddy Turnstone | | | | | | | | | | | | | 40 |
| Sanderling | 4 | | | | | | | | 0 | | | | 140 |
| Dunlin | | | | | | | | | 0 | 490 | 400 | | 1285 |
| Purple Sandpiper | | | | **12** | | | | | | | | | 51 |
| Least Sandpiper | | | | | | | | | | 6 | 23 | | |
| Long-billed Dowitcher | | | | | | | | | | 35 | 11 | | 1 |
| Wilson's Snipe | | | 1 | 67 | | | 3 | 19 | | 6 | 2 | 1 | 11 |
| American Woodcock | 4 | 1 | | | | | 4 | 2 | 6 | 5 | 1 | 4 | 17 |
| Dovekie | | | | | | | | | | | | | 7 |
| Bonaparte's Gull | 6 | 176 | | | | 2 | 5 | | | | | 1 | 66 |
| Laughing Gull | | 2 | | 6 | | | | | | | 1 | | |
| **Franklin's Gull** | | | | | | | 0 | | | | | | |
| Ring-billed Gull | 1312 | 2833 | 364 | 1270 | 426 | 156 | 2172 | 4118 | 1555 | 2054 | 590 | 1581 | 3812 |

| Species | Annapolis-Gibson Island | Middle River | Patuxent River | Jug Bay | Port Tobacco | Point Lookout | Lower Kent County | Denton | St. Michaels | Southern Dorchester County | Crisfield | Salisbury | Ocean City |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Herring Gull | 395 | 432 | 89 | 1192 | 91 | 79 | 208 | **800** | 530 | 243 | 784 | 433 | 1192 |
| Iceland Gull | | | | | | | | | | | | | |
| Lesser Black-backed Gull | 1 | 1 | | | | | 1 | | | | 1 | 1 | 4 |
| Great Black-backed Gull | 241 | 141 | 24 | 147 | 1 | 40 | 101 | **97** | 382 | 9 | 24 | 169 | 206 |
| large gull sp. | | | | | | | | | | | | | |
| gull sp. | 79 | 117 | | 1004 | 4 | 22 | | | | | 3 | 68 | 675 |
| Forster's Tern | | | | | | 1 | | | | 5 | | | 70 |
| Black Skimmer | | | | | | | | | | | | | 0 |
| Rock Pigeon | 260 | 289 | **41** | 129 | | | 94 | 319 | 45 | 2 | 280 | 92 | 274 |
| Mourning Dove | 462 | 275 | 189 | 313 | 87 | 56 | 296 | 342 | 301 | 147 | 222 | 624 | 595 |
| Barn Owl | | | | 1 | | | | | | 2 | | | |
| Eastern Screech-Owl | 10 | | 2 | 2 | 5 | | **57** | 18 | 70 | **22** | 18 | 29 | 40 |
| Great Horned Owl | 5 | 2 | 1 | 7 | 2 | 4 | 56 | 20 | 42 | 39 | 21 | 36 | 28 |
| Barred Owl | 7 | 5 | | 3 | 1 | 1 | 6 | 11 | 2 | 5 | 2 | 1 | 3 |
| Short-eared Owl | | | 1 | | | | | | 0 | 3 | 2 | | |
| Northern Saw-whet Owl | | | | | | | 1 | | | | | | 2 |
| Belted Kingfisher | 33 | 13 | 15 | 23 | 16 | 3 | 17 | 10 | 18 | 23 | 28 | 31 | 41 |
| Red-headed Woodpecker | | | 6 | 3 | 17 | | | | | 1 | **4** | | |
| Red-bellied Woodpecker | 378 | 107 | 85 | 230 | 90 | 56 | 171 | 81 | 116 | 65 | 64 | **92** | 107 |
| Yellow-bellied Sapsucker | 65 | 28 | 16 | 47 | 16 | 13 | **37** | 17 | **35** | 5 | 11 | **28** | 16 |
| Downy Woodpecker | 261 | 172 | 44 | 142 | 39 | 22 | 118 | 50 | 68 | 75 | 47 | 103 | 100 |
| Hairy Woodpecker | 66 | 22 | 2 | 42 | 6 | 2 | 41 | 12 | 18 | 9 | 9 | 10 | 19 |
| Northern Flicker (Yellow-shafted) | 186 | 92 | 63 | 161 | 84 | 29 | 205 | 87 | 110 | 82 | 106 | 120 | 200 |
| Pileated Woodpecker | 50 | 15 | 9 | 37 | 29 | 7 | **26** | 40 | 18 | 25 | 22 | **48** | 31 |
| American Kestrel | | 3 | 5 | 3 | 2 | 5 | 2 | 18 | 3 | 6 | 9 | 4 | 12 |
| Merlin | 2 | 2 | | | | | **2** | **2** | 3 | | **6** | 4 | 1 |
| Peregrine Falcon | 4 | 2 | | 0 | | | 1 | | 1 | 1 | | | 1 |
| Eastern Phoebe | 2 | 3 | | 3 | 2 | | 2 | | 1 | 2 | 4 | 4 | 16 |
| **Say's Phoebe** | | | | | | | | | | | | | |
| **Vermilion Flycatcher** | | | | | | | | | | | 1 | | |
| **Ash-throated Flycatcher** | | | | | | | | | | | | | |
| **shrike sp.** | | | | | | | | | | | | | |
| **Blue-headed Vireo** | | | | | | | | | | | | | |
| Blue Jay | 750 | 341 | 187 | **556** | 243 | 58 | 662 | **274** | 597 | 106 | 141 | 201 | 179 |
| American Crow | 1093 | 651 | 542 | 1048 | 231 | 293 | 284 | 275 | 364 | 335 | 461 | 619 | 433 |
| Fish Crow | 112 | 199 | 1 | 108 | | 1 | 1 | 7 | 1 | 158 | 142 | 88 | 60 |
| crow sp. | 52 | 354 | | 518 | | | | 55 | | 112 | 295 | 15 | 29 |
| Common Raven | **1** | | | | | | | | | | | | |
| Horned Lark | | | 3 | | | 3 | **919** | 657 | 0 | 6 | 16 | 4 | 25 |
| Tree Swallow | | | | | | | | | | | 5 | | 0 |
| Carolina Chickadee | 827 | 348 | 199 | 291 | 86 | 85 | 247 | **260** | 223 | 138 | 176 | 269 | 336 |
| Black-capped Chickadee | | | | | | | | | | | | | |
| Tufted Titmouse | 576 | 201 | 54 | 287 | 116 | 56 | **193** | **209** | 117 | 55 | 57 | 156 | 135 |
| Red-breasted Nuthatch | 4 | 4 | | 1 | | | 5 | 2 | 7 | | | 3 | 8 |
| White-breasted Nuthatch | 192 | 119 | 18 | 125 | 40 | 3 | 105 | 36 | 80 | 16 | 3 | 19 | 12 |
| Brown-headed Nuthatch | | | **24** | | | 19 | 11 | | 20 | 225 | 93 | **55** | 68 |
| Brown Creeper | 31 | 11 | 5 | 13 | 4 | 1 | 12 | 16 | 12 | 11 | 18 | 22 | 37 |
| House Wren | | 1 | | | | 1 | 1 | | | | 3 | 1 | 1 |
| Winter Wren | 47 | 40 | 1 | 13 | 7 | 2 | **37** | 18 | 15 | 14 | 25 | 31 | 90 |
| Sedge Wren | | | | | | | 1 | | | 6 | 15 | 1 | |
| Marsh Wren | 1 | 3 | | 2 | | | 5 | | 1 | 7 | 22 | 1 | 5 |
| Carolina Wren | 481 | 235 | 107 | 213 | 96 | 51 | 293 | 104 | 113 | 57 | 152 | 149 | 365 |
| Golden-crowned Kinglet | 40 | 11 | 6 | 21 | 10 | 8 | 15 | 42 | 15 | 21 | 19 | 41 | 72 |
| Ruby-crowned Kinglet | 53 | 10 | 7 | 16 | 12 | 10 | 15 | 7 | 14 | 24 | 32 | 20 | 29 |
| Eastern Bluebird | 328 | 40 | 210 | 245 | 162 | 143 | 243 | 208 | 424 | 160 | 329 | 307 | 190 |
| Hermit Thrush | 96 | 62 | 17 | 104 | 35 | 7 | **46** | **73** | 22 | 30 | 40 | 105 | 57 |
| American Robin | 19512 | 1292 | 621 | 1209 | 104 | 515 | 459 | 1454 | 556 | 296 | 191 | 2357 | 19859 |

| Species | Annapolis-Gibson Island | Middle River | Patuxent River | Jug Bay | Port Tobacco | Point Lookout | Lower Kent County | Denton | St. Michaels | Southern Dorchester County | Crisfield | Salisbury | Ocean City |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Gray Catbird | 11 | 8 | 2 | 7 | 1 | 1 | 7 | 2 | 1 | 7 | 17 | 15 | 45 |
| Brown Thrasher | 36 | 5 | 4 | 29 | 11 | 4 | 23 | 8 | 9 | 10 | 15 | 25 | 24 |
| Northern Mockingbird | 206 | 105 | 73 | 90 | 42 | 53 | 143 | 96 | 145 | 41 | 60 | 108 | 164 |
| European Starling | 7293 | 3243 | 2061 | 1668 | 622 | 814 | 3076 | 3292 | 2298 | 553 | 2009 | 2358 | 16164 |
| American Pipit | 30 | 1 | 2 | 70 | 44 | | 81 | 57 | | 20 | 146 | | 6 |
| Cedar Waxwing | 1266 | 50 | 258 | 515 | 145 | 116 | 55 | 42 | 101 | 7 | 22 | 59 | 338 |
| Lapland Longspur | | | | | | | | 3 | | | | | |
| Snow Bunting | 2 | | | | | | | | | | | | 29 |
| Orange-crowned Warbler | | | | 1 | | | | | | | | | 1 |
| Common Yellowthroat | | | | 1 | | | | | | 4 | 1 | 1 | |
| Cape May Warbler | | 1 | | | | | | | | | | | |
| Palm Warbler | | | | | | | | | | 3 | 7 | 1 | 8 |
| Pine Warbler | | | | | | 2 | 1 | 1 | 1 | | 1 | 5 | 4 |
| Yellow-rumped Warbler | | 29 | | 53 | | 82 | | | | | 1134 | | |
| Yellow-rumped Warbler (Myrtle) | 32 | | 51 | | 84 | | 86 | 29 | 208 | 401 | | 187 | 1950 |
| Eastern Towhee | 105 | 45 | 33 | 114 | 39 | 20 | 99 | 21 | **48** | 39 | 26 | 43 | 47 |
| American Tree Sparrow | | 4 | | 3 | | | 6 | | | | | | |
| Chipping Sparrow | 13 | | 2 | 8 | 8 | 9 | 8 | 35 | 2 | 59 | 44 | 29 | 143 |
| Field Sparrow | 63 | 16 | 31 | 35 | 10 | 6 | 65 | 31 | 26 | 69 | 14 | 14 | 42 |
| Savannah Sparrow | 5 | 18 | 40 | 4 | 18 | 4 | 144 | 21 | 12 | 131 | 46 | 83 | 114 |
| Savannah Sparrow (Ipswich) | | | | | | | | | | | | | 23 |
| Nelson's Sparrow | | | | | | | | | 0 | | | | |
| sharp-tailed sparrow sp. | | | | | | | | | | | 3 | | |
| Seaside Sparrow | | | | | | | | | | 1 | 1 | | |
| Fox Sparrow | 18 | 35 | 4 | 16 | 2 | 13 | 36 | 6 | 7 | 28 | 22 | 21 | 125 |
| Song Sparrow | 481 | 482 | 82 | 340 | 127 | 122 | **1271** | 238 | 285 | 417 | 259 | 438 | 849 |
| Lincoln's Sparrow | | | | | | | | | | | | 1 | 1 |
| Swamp Sparrow | 80 | 393 | 13 | 109 | 35 | 3 | **279** | 10 | 22 | 311 | 183 | 148 | 373 |
| White-throated Sparrow | 2272 | 1083 | 757 | 1527 | 346 | 346 | 2539 | 1272 | 837 | 257 | 394 | 1054 | 1643 |
| White-crowned Sparrow | 4 | 0 | 1 | 4 | 13 | | 69 | **27** | 2 | | | 4 | 7 |
| Dark-eyed Junco | 2706 | 900 | 815 | 951 | 499 | 305 | 1552 | **1611** | 1230 | 164 | 604 | 1359 | **1875** |
| Summer Tanager | | | | | | | | | | | | | |
| Northern Cardinal | 1113 | 330 | 117 | 333 | 102 | 100 | 488 | 208 | 197 | 71 | 140 | 258 | 398 |
| Red-winged Blackbird | 1905 | 1715 | 255 | 5857 | 694 | 792 | 25070 | 2282 | 3357 | 16797 | 6257 | 14594 | 8388 |
| Eastern Meadowlark | 6 | 10 | 33 | 17 | 20 | 14 | 31 | 9 | | 58 | 208 | 90 | 27 |
| Yellow-headed Blackbird | | | | | | | 1 | | | | | | |
| Rusty Blackbird | 39 | 52 | | 58 | | | 4 | | | 1 | 1 | 9 | 20 |
| Common Grackle | 1746 | 222 | 54 | 23546 | 724 | 264 | 55951 | 1279 | 37 | 551 | 4038 | 1098 | 21439 |
| Boat-tailed Grackle | | | | | | | | | | 25 | 56 | | |
| Brown-headed Cowbird | 213 | 20 | 44 | 16 | 25 | | 1337 | 89 | 113 | 58 | 4 | 143 | 10542 |
| blackbird sp. | 32 | | | 1290 | | | 4000 | | | | | 500 | 1700 |
| Baltimore Oriole | | | | 2 | | | | | | | | | |
| House Finch | 367 | 84 | 31 | 119 | 19 | 13 | 44 | 118 | 210 | 14 | 66 | 28 | 226 |
| Purple Finch | 5 | 1 | | 35 | 5 | 4 | 7 | 12 | 17 | 5 | 3 | 2 | 19 |
| Pine Siskin | 13 | 9 | | 5 | 7 | | 3 | | 1 | 1 | 9 | 10 | 36 |
| American Goldfinch | 469 | 214 | 94 | 237 | 97 | 42 | 197 | 109 | 188 | 54 | 122 | 168 | 422 |
| Evening Grosbeak | | | | | | | | | | | | | |
| House Sparrow | 436 | 377 | 169 | 153 | 110 | 23 | 184 | 197 | 118 | 6 | 137 | 95 | 265 |

## *MARYLAND BIRDLIFE*

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**CONTENTS – FALL 2015**

Editor's Note
*Eugene J. Scarpulla* ..... 1
First Record of Couch's Kingbird, *Tyrannus couchii*, in Maryland
*Kathleen B. Calvert and Michael J. Welch* ..... 2
Maryland's First Live Photo-documented Chestnut-collared Longspur, *Calcarius ornatus*
*Thomas C. Feild, James K. Green, and Geraldine C. King* ..... 7
Rare Occurrences of Ground-nesting in the Northern Flicker, *Colaptes auratus*
*Jan G. Reese and David Bridge* ..... 14
An Evaluation of Species Diversity and Age Structure during Fall Migration Mortality from Urban Structures in Baltimore, Maryland and Washington, District of Columbia
*Mark S. Johnson, Leslie R. Eastman, Robert J. Werrlein, and Jay M. Rubinoff* ..... 23
2015 Spring Raptor Migration at Fort Smallwood Park, Anne Arundel County, Maryland
*Sue A. Ricciardi* ..... 34
2014 Maryland May Count
*Michael J. Welch* ..... 38
2014 Maryland Fall Count
*Charles R. Stirrat* ..... 46
2013 Maryland Fall Count: Corrigendum
*Charles R. Stirrat* ..... 53
Maryland Christmas Bird Counts (115th CBC) – December 2014 through January 2015
*John B. (J.B.) Churchill* ..... 54